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SUPREME COURT, U.S.

IN THE

Supreme Court of the United States

October Term, 1977

STATE OF COLORADO, *Plaintiff*

v.

STATE OF NEW MEXICO
AND PAUL G. BARDACKE,
ATTORNEY GENERAL OF THE
STATE OF NEW MEXICO, *Defendants*

ADDITIONAL FACTUAL FINDINGS

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May 31, 1983

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ADDITIONAL FACTUAL FINDINGS

Pursuant to decision of the United States Supreme Court dated December 13, 1982 which suggested additional factual findings, the Special Master in compliance therewith submits the following additional findings in the areas and in the respective order as set forth in the decision of the Court.

**THE EXISTING USES OF WATER FROM THE
VERMEJO RIVER, AND THE EXTENT TO
WHICH PRESENT LEVELS OF USE REFLECT
CURRENT OR HISTORICAL WATER
SHORTAGES OR THE FAILURE OF EXISTING
USERS TO DEVELOP THEIR USES
DILIGENTLY**

There are nine existing users of the Vermejo River which were mentioned during the course of this case. The users range from corporations to individuals, and each of them use the water primarily for irrigation except Kaiser Steel Corporation. The users are all in New Mexico, there being no appropriators of the Vermejo River in Colorado.

A more careful look at each user will reveal not only the type and amount of use, but the reasons behind current levels of use. It should be noted here, that while each party presented the evidence which it thought should be considered in making this presentation of use, the Master has carefully considered the evidence and testimony of both parties in this fact finding process.

In order to understand fully the significance of various figures used to represent acres and acre feet involved in the uses, the Master here notes that the maximum duty of water for irrigation on the lands involved is 2.0 acre feet of water per annum per acre of land irrigated. To illustrate, 100 acres irrigated would involve 200 acre feet of water. The Vermejo Conservancy District is excepted, its maximum duty of water for irrigation being 1.5 acre feet of water per annum per acre. One other point of clarification is presented here. Throughout the trial and, therefore, throughout these findings, reference is made to the Dawson gauge. The Dawson gauge is a stream gauging station operated by the U.S. Geological Survey on the Vermejo River

located one and a half miles above Dawson, New Mexico. The station is further downstream than the users here discussed except Phelps-Dodge, the Vermejo Conservancy District, and District users.

(A) One user is the Vermejo Park Corporation which primarily is an operation involving a hunting and fishing resort. The Corporation is a wholly-owned subsidiary of Pennzoil Corporation. Irrigated land is used to grow hay. The corporation has decreed rights to irrigate approximately 870 acres. The number of acres actually being irrigated is between 200 and 250. (Tr. 2059-2080)

New Mexico claims that all 870 acres would be irrigated if there was sufficient water, and that even current uses are threatened by priority calls from senior appropriations. However, there are several evidentiary highlights which lead the Master to believe that the Vermejo Park Corporation has not diligently put to use all the water available to it.

Testimony of New Mexico's State Engineer revealed that as second priority on the Vermejo, there generally would be enough water for the Park Corporation to irrigate more than 250 acres. (Tr. 2427). Table 2 of Colorado's Exhibit 5 which is the "monthly and annual discharge of the Vermejo River near Dawson, New Mexico" seems to further support the availability of water to Vermejo Park Corporation. The table indicates discharge at a point past several of the users. Various years from 1916 to 1979 are represented and the annual discharge in acre feet varies from 1,480 acre feet in 1951 to 64,420 acre feet in 1942 with an average discharge of 12,919 acre feet.

There was further testimony indicating other sources of irrigated lands available to the Park Corporation, sources dependent on "a completely different water system." (Tr. 2109, 11. 8, 9). It is the opinion of this Master that the availability of

other sources is but another factor in the Park Corporation's failure to fully develop use for Vermejo River water.

The Master also finds it significant that the water used by the Park Corporation comes from only one ditch, Ditch 13. There is no gauge on Ditch 13, and the amount of water taken is roughly measured by the number of waterings. (Tr. 2102-2103). There is little doubt that the people working with irrigation and waterings do know roughly how much water is used and the Master respects such skill; however, the fact remains that the use of water by the Vermejo Park Corporation is at best careless and thus not efficiently developed.

Finally, the threat of priority calls appears to the Master to be little more than informal requests. (Tr. 2086, 2088).

The failure of Vermejo Park Corporation to use its full decree of water appears not to be based on water shortages but on the lack of development and perhaps even the lack of need by the Park Corporation of the Vermejo water.

(B) A second user is Kaiser Steel Corporation which diverts Vermejo water for use in its coal mines. Kaiser Steel owns rights for 230 acre feet of water (acres being an inappropriate measure since the water is not used for irrigation) and leases another 400 acre feet from Phelps-Dodge. (Tr. 1721-1722). With 630 acre feet of water available, the maximum ever used by Kaiser Steel was 361.47 acre feet in 1976. (Tr. 1727, 1738).

Both Colorado and New Mexico are in agreement that one reason for the failure to fully develop the available water is the Kaiser mine at York Canyon. An average of 25% of Kaiser's necessary water is supplied from the York Canyon site. That diversion point is not directly on the Vermejo River and should be unaffected by prior Vermejo River diversions. (Tr. 1742-1744).

Once again, the flows at the Dawson gauge, as well as at the stateline (a measuring gauge installed by C. F. & I. which admittedly has some problems with accuracy) show no shortage

of water, either historically or at the present. It is the opinion of the Master that the water needs of Kaiser Steel are currently being met by development of only a portion of the Vermejo River water, supplemented from other sources. For this reason, Kaiser Steel has lost its incentive to fully develop all of the available Vermejo River water.

(C) A third user of Vermejo water is Phelps-Dodge, currently leasing their property to C. S. Cattle Company. Phelps-Dodge has first priority on the river and is entitled to irrigate 501.19 acres or 1,002.38 acre feet. As previously mentioned, Phelps-Dodge leases 400 acre feet to avoid forfeiture, leaving 602.38 acre feet or irrigation for 351.19 acres. (Tr. 2140, 2415-46, 2148).

Testimony of a C. S. Cattle Company employee indicated that prior to 1965, 450-500 acres of the Phelps-Dodge property were irrigated. However, a flood and a railroad altered irrigation processes and since 1965 only 80-150 acres have been irrigated. (Tr. 2174-2177). Granted, some of the land, not worth reclaiming from flood damage, accounts for the loss of irrigated acres. However, testimony revealed that up to 110 additional acres could have been irrigated without additional reclamation. (Tr. 2180). New Mexico claims the additional acres are not irrigated because there is insufficient water available and presented testimony (from a Phelps-Dodge employee) that all the land possible was currently being irrigated. A logical analysis of the water availability leads the Master to doubt the accuracy of New Mexico's claims.

Phelps-Dodge is one of the first users located below the Dawson gauge. (Colo. Ex. No. 5, fig. 1). The gauge then should prove to be a fairly accurate account of water available to Phelps-Dodge. The figures in Colorado Exhibit 5, Table 2, *supra* show an ample supply of water available annually for Phelps-Dodge. Furthermore, as user with first priority on the river (Col. Ex. No. 25, *Phelps Dodge Corp., et al. v. The W. S. Land and Cat-*

tle Co., et al., No. 7201, Dist. Ct., 8th Judicial Dist. New Mexico, Nov. 13, 1941), it is inconceivable to the Master that an insufficient amount of water is available for all of Phelps-Dodge's needs. Many other users with junior priorities are using fair amounts of Vermejo River water. If Phelps-Dodge was in need of and intended to fully develop all of its water rights, it seems very likely that it should and would be able to do so.

New Mexico also would "reserve" 220-900 acre feet of water which Phelps-Dodge is *not* using presently, but may want to use if it resumes mining on its property. (Tr. 2155-2158). The Master finds this rationalization for more water weakened by New Mexico's own view of the benefits claimed by Colorado, should they be given rights to Vermejo water. New Mexico claims the benefits stated by Colorado are speculative, problematic and insufficiently precise, (Defendants' Brief on Remand, pp. 62, 63) yet they would estimate Phelps-Dodge must be allowed access to 250 to 900 acre feet of water should they decide to reopen a coal mine. Furthermore, New Mexico does not indicate that there would be a problem should the extra water be needed. Presumably it is presently available, unused.

(D) The next users are considered as a group since they each divert their water at the Vermejo canal, from the Vermejo Conservancy District (District). These users include Pompeo, an individual user with rights senior to the District; Odom, an individual user with rights senior to the District; Porter, an individual user employed by C. S. Ranch (leasing the Phelps-Dodge property); Duell whose rights are now owned by Messick and Kaiser, Messick being an individual user with rights superior to the District; and an additional 46.73 acres belonging to the Vermejo Park Corporation previously discussed.

Pompeo, aside from being a farmer, is superintendent of the schools in Cimarron, New Mexico. He has rights to irrigate 101.5 acres and actually irrigates approximately 50 acres.

His testimony was that water from the river at flood stage is not usable. Pompeo has approximately 41.9 acres on a hill which he has irrigated in the past resulting in an unsuccessful crop. Now, he says, there is no water to irrigate his remaining acreage. (Tr. 2193-2204). There seems to be no question that water is available "in some form." (Tr. 2203, 11. 16, 17). Furthermore, Pompeo's rights are senior to the District; the District is receiving large amounts of water, and the readings at the Dawson gauge indicate sufficient water is available should Pompeo decide to diligently and efficiently develop it.

Odom, another individual using Vermejo water, has rights to irrigate 264 acres. Odom testified that when he first began farming the area in 1955, 264 acres were irrigated. Today he is irrigating 113 acres allegedly due to a lack of water; the decline occurring primarily in the early seventies. (Tr. 2208-2214).

Odom also has rights which are senior to the District and, once again, it would appear to the Master that the flow at the Dawson gauge indicates sufficient water to supply Odom with the water he lacks.

Porter is a third individual user and is employed by C.S. Cattle Company, the lessee of Phelps-Dodge's land and water rights. Porter has rights to 16.49 acres and actually irrigates about 14 acres. His rights are not senior to the District, yet he irrigates 85% of the land he is entitled to irrigate, with no allegation that lack of water is the reason behind failure to fully put to use the remaining water to which he is entitled. (Tr. 2186-2191).

Duell had water rights to irrigate 163.4 acres. The irrigation of 75 acres now belongs to Kaiser and the remaining water belongs to another individual, Messick. These rights are superior to the District and are fully developed and put to use. (Tr. 1028-1031).

Finally, the Vermejo Park Corporation has rights to ir-

rigate an additional 46.73 acres, the water being diverted from the District. The rights are fully developed and put to use. (Tr. 2109-2111).

(E) The Vermejo Conservancy District is the final user of Vermejo River water discussed in this case. The District irrigates an average of 4,379 acres, though it has rights from the Bureau of Reclamation for 7,979 acres. The District is part of a reclamation project which although expensive in terms of time and money, never lived up to its expectations or even proved to be a successful project, having failed to fully develop its entitled acreage. (Tr. 164-169).

There has been testimony from New Mexico witnesses to the effect that the diversion of water in Colorado would result in a water shortage felt almost entirely by the District with only *some* effect on other users. (Tr. 1323-24). This testimony leads to the conclusion that shortages resulting from Colorado diversion (if they exist at all) would be experienced in a project that has failed from the beginning to develop its allotted acreage, has failed to meet its financial obligations, and quite possibly should never have been built.

New Mexico claims that the nonuse on the part of the District is caused by the "drought" of the early seventies. However, the drought of the 1970's cannot be responsible for the nonuse which has existed in the District since its formation in the fifties, nonuse through a time period when all other users, and evidence from flow tables found sufficient water available. (Tr. 166-169, 2174-75, 2211-2213). Other testimony supported the contention that the shortage in the District resulted from unregulated stockponds, fishponds, and water detention structures. (Col. Ex. No.s 38, 40).

Finally, there is substantial evidence that the District receives one-third to one-half of its water from sources other than the Vermejo River. (Tr. 229). One major alternative source is

the Chico Rico providing approximately 35% of the District's water. Other sources include the Willow, Crow, Curtis and Salt Peter creeks. They may provide up to 10% of the water used by the District. Obviously, development of the entire allotment of water from the Vermejo is not a top priority in the District. Complete and diligent development does not appear to be essential, in part because of alternative sources and in part because of the inefficient and problematic operation of the District itself.

It is the opinion of the Master supported by substantial evidence that the existing users of Vermejo water have not diligently and efficiently developed uses which would justify their need to retain their full decreed irrigation or water rights. While shortages and dry years do exist in the history of the Vermejo River, it does not appear that those shortages are the basis behind the current users failure to fully develop their decreed water rights.

II

THE AVAILABLE SUPPLY OF WATER FROM THE VERMEJO RIVER ACCOUNTING FOR FACTORS SUCH AS VARIATIONS IN STREAMFLOW, THE NEEDS OF CURRENT USERS FOR A CONTINUOUS SUPPLY, THE POSSIBILITIES OF EQUALIZING AND ENHANCING THE WATER SUPPLY THROUGH WATER STORAGE AND CONSERVATION, AND THE AVAILABILITY OF SUBSTITUTE SOURCES OF WATER TO RELIEVE THE DEMAND FOR WATER FROM THE VERMEJO RIVER

The most difficult aspect of this area is making a determination on how to measure the available supply of water from the Vermejo River. Of course, variations in streamflow make it im-

possible to base the determination on one year, one month, or even one average.

Colorado determines the available supply of water by using basin discharge or water produced from the watershed upstream from a given point of diversion. (Tr. 416). Colorado further attempts to supply a figure for virgin flow of the river, 1955-1979. This figure is achieved by taking the average annual flow of the river at the Dawson gauge and adding the depletions of the appropriators prior to the gauge, an accretion between the gauge and the Vermejo Conservancy District, and a questionable 2,000 acre feet depleted by an unknown number, possibly hundreds of ponds and foot dams. The resulting figure reveals an average over 14,000 acre feet of water in the Vermejo River virgin flow. (Plaintiff's Brief on Remand, pp. 28-29).

Naturally, New Mexico does not agree with this method of determination. Instead, supposedly based on the prior decision of *Wyoming v. Colorado*, 259 U.S. 419 (1922), New Mexico terms available water as "divertable dependable water." (Tr. 1197-98). New Mexico further contends that average annual flows cannot be used in any way in determining divertable dependable amounts of water. However, New Mexico presents no alternative means of measuring the amount of available water. Unfortunately, because of the lack of control in actual water use (discussed below), it is difficult to determine exactly how much water has been and is being diverted by New Mexico users. Consequently a determination of available supply in the Vermejo River is equally difficult.

It is true that the guidelines set forth in *Wyoming v. Colorado*, *supra* are appropriate and should be applied in this case. The Master here sets forth provisions from the case that provide most helpful. The Court there declined to rely too heavily on the average flows and instead considered "the unalterable need for a supply which is fairly constant and dependable, or is suscepti-

ble of being made so by storage and conservation within practicable limits." For clarification, the Court noted "By this it is not meant that known conditions must be such as give assurance that there will be no deficiency even during long periods, but rather that a supply which is likely to be intermittent, or to be materially deficient at relatively short intervals, does not meet the test of practical availability." *Wyoming v. Colorado, supra* at 480. And finally, to meet the need, the Court finds that the doctrine of appropriation "lays on each of these states a duty to exercise her right reasonably and in a manner calculated to conserve the common supply." *Id.* at 484.

On the basis of these guidelines, it is difficult to depend entirely on Colorado's alleged virgin flow figures. New Mexico attempts to show the fault in averaging by removing the two highest flow years (1941, 1942) from 1921 to 1978 which changes the average from 12,800 acre feet to 10,900 acre feet. However, even an average of 10,900 acre feet at Dawson gauge would seem to provide a fair amount of available water, and more than enough to supply the current uses below the gauge.

Removal from consideration of the two lowest years as well as the two highest years from 1916 to 1979 (using figures from Colo. Ex. No. 5, Table 2) results in an average of 11,543 acre feet annually. And finally, the average annual acre feet in the 1970's with its alleged drought is 8,262. Obviously, the figures can be used to reach nearly any result, and averages are unfortunately unavailable to irrigate crops and provide water for other uses; however, it is the opinion of the Master that even looking at each individual month and each individual year, there does not exist a situation where supply is "intermittent" and "materially deficient at short intervals." A copy of the above-mentioned Table 2 is attached for the Court's own consideration.

In addition to consideration of figures, annual, average, or otherwise, the court in *Wyoming v. Colorado, supra* found the

existence of a duty to "conserve the common supply." The court in this case is also concerned with "the possibilities of equalizing and enhancing the water supply through water storage and conservation." (*Colorado v. New Mexico*, No. 80, pp. 12-13, December 13, 1982).

New Mexico argues in its Brief on Remand (citing supporting testimony) that there are no important aquifers in New Mexico (Tr. 1735), that development of a ground water source in the Vermejo Park Corporation through wells was unsuccessful because the wells were drilled in the wrong places (Tr. 2088-89), and that importing water to the City of Raton, New Mexico was probably necessary in spite of the construction of a reservoir nearby. (Tr. 1352-1353). The Master finds such testimony unhelpful in trying to determine how the users of Vermejo River water have attempted to enhance their water supply through storage and conservation.

On the other hand, Colorado argues that the Vermejo Conservancy District, the most affected by a Colorado diversion, has great ability to store water and enhance the supply. The District reservoirs primarily divert flows from the Chico Rico but can receive water from the Vermejo River. Two reservoirs can divert water only from the Vermejo, reaching a capacity of 15,200 acre feet. This testimony is from New Mexico's witness, the chief engineer of the Interstate Stream Commission. (Tr. 1296-1299).

The issue of conservation is one that will be dealt with in much greater detail later. However, the Master would here point out one area of contrast in conservation measures between New Mexico and Colorado, that of administration in water usage. Testimony is most revealing.

"The New Mexico State Engineer does not keep records, make measurements, or keep records of actual water use in the Vermejo basin. Neither does the water user, with one exception, with exception of the Kaiser

Steel, he does not make water users themselves make such measurements."

(Tr. 136, 11. 16-21). On cross examination by counsel for Colorado the New Mexico State Engineer explained:

Q. Wouldn't it be pertinent in your administration of the Vermejo River to know what the depletions and evaporations and so forth are between the Vermejo District headgate and the land in the District?

A. We have some idea of that. I understand you to say Mr. Mutz has developed certain figures. But, as I say, not necessary to our administration.

Q. Well, you administer the Vermejo Decree, do you not?

A. Only in the sense of occasional fieldtrips to determine primarily whether any unauthorized acreage is being irrigated. Whether any unauthorized—usage authorized by that decree or subsequent permits. But we do not administer the priorities and diversion rates adjudicated by the decree.

Q. Who does? Who does do that?

A. We talked about that some. There is a working among themselves, a cooperation over there. The people work the problems out among themselves. Occasionally complaining to us.

When we become involved then in the discussions and attempts to resolve the problem. So long as they are able to resolve them and live with it, then day-to-day administration of priorities and the rates of diversion is not necessary and not in the public interest.

It's costly and it costs those water users when we have to undertake that kind of administration. And I think that gives them some incentive to be reasonably cooperative in working out their problems locally.

(Tr. 2434, 11. 5-25; Tr. 2435, 11. 1-12).

The New Mexico State Engineer further testified that notices of forfeiture have not been issued in spite of long periods of nonuse. There are allegedly two reasons for the absence of forfeiture: (1) no complaints with which to initiate an investigation and (2) "the State Engineer simply does not have the staff to go out and monitor for nonuse." (Tr. 2426, 11. 9-11, *see also* Tr. 2425).

Compare the testimony of the State Engineer for the State of Colorado on direct examination:

[T]he Water Commissioner is really the first state official who in fact regulates the flows through the various canals and ditches and reservoirs that are decreed in the state.

The Commissioner is required to keep daily records insofar as he's capable of all of the diversions of the several ditches in his district.

He, of course, particularly in the mountainous areas of the west slope, is not able to visit each of those ditches on a daily basis. But generally in divisions 1 and 2, we are sufficiently staffed and water is of such a critical nature, and generally in short supply, that the Commissioner has daily records at least during the irrigation season when all of these decrees are exercised to a maximum.

The Commissioner's authority generally ends in terms of distribution of water at the headgate. The Commissioner may notify the owner of a ditch whether or not he's in priority for that day, and if he is in priority, he will tell him how much water he can divert.

Certainly not exceeding his decreed amount, but oftentimes less if he happens to be the last right that is in priority, and that water is then diverted from the headgate into the conveyance, whether an off-canal conveyance or canal.

The Commissioner then is charged by statute to determine that that water user is placing that water to beneficial use.

The measure of a water right in Colorado, each time one of the water courts is required to decree a change of use, or change in point of diversion, the first criteria applied is what has been the historic beneficial use.

Q. That is without regard to how much has been decreed, it's how much is actually applied to the land?

A. Absolutely, there can be decreed amounts which are far in excess of what the historic diversion has been, and the value of that water right is really what the historic right has been.

The Commissioner then is charged to insure that the owner of that right utilizes that water for beneficial use, and that he does not waste any of that water.

And our statutes allow that if a commissioner or the division engineer observes that a user is wasting water, he can determine what the amount of that waste is, and he can then reduce the amount diverted at the headgate by that amount of waste.

So the Commissioner is checking first for amount of water being taken from the stream, and under what priorities, and secondly, what uses and what practices are being used in the beneficial consumption of that water.

Q. It would be my understanding from what you said, you are the chief administrative official in the State of Colorado as to water rights?

A. Yes. The statutes are clear the State Engineer is the only official that has authority to administer the rights in the state.

Q. The division engineers and water commissioners you referred to work under your supervision?

A. That's correct.

Q. Would you please tell us your involvement in the administration of water as it relates to these compacts and court decrees? You touched upon it, but I wish you to go into greater detail.

A. Well, Colorado is party, as I stated, in eight Interstate Compacts, and two U.S. Supreme Court Decrees.

I dare say nearly all the streams in the state are subject to provisions of at least one Interstate Compact, and many as high as three.

The responsibility of my office is to insure that those interstate obligations are met within the terms of each of the various compacts.

The way in which that obligation is performed varies from basin to basin depending on which compact we are administering.

But generally it consists of the curtailment of water rights on a junior basis to insure that we meet Colorado's obligation.

For example, in the Rio Grande compact which is probably the most heavily administered stream in the state in terms of compact obligation, we often find it necessary to curtail water users on the Conejos River with priorities as early as 1851 in order to meet Colorado's obligation under the 1938 compact at the state line gauge between Colorado and New Mexico.

(Tr. 516, 11. 2-25; 519, 11. 1-21).

This testimony leaves little doubt that regardless of the variations in streamflow on the Vermejo River, the New Mexico users are not doing all that is possible to preserve and enhance their available supply.

It would appear that the only user with a need for a continuous supply of water is Kaiser; the other users engaged in irrigation, requiring water approximately four to five months out of the year. Kaiser's maximum use has been 361 acre feet in a year, this occurring only one year. (Tr. 1738). Considering that figure, Kaiser uses approximately 30 acre feet per month and the average is presumably somewhat lower. The monthly discharge at the Dawson gauge presented by Table 2 indicates that *very*

rarely is there less than 30 acre feet of water available. Furthermore, as discussed earlier, Kaiser also has a source of water in York Canyon, providing up to 25% of its water needs. (Tr. 1742-1744).

As for the other users, for the most part the months of April through September account for the highest flows at the Dawson gauge and presumably the wettest months occur when water is in highest demand. The fact that the Vermejo Conservancy District has a reservoir system has already been mentioned. Comparisons of irrigated acreage (N.M. Ex. F-37) to discharge at the Dawson gauge (Colo. Ex. 5, Table 2) indicate that the reservoir system, at least at times, has provided water in dry periods.

In spite of New Mexico's contention that there is "no alternative source of supply for any of the existing uses of Vermejo water," (Defendants' Brief on Remand, p. 34) the Master finds that some other water sources exist. While there was testimony that the Chico Rico has had some shortages in the last 30 years (Tr. 1332), there was also testimony that Kaiser has purchased 2,000 acre feet of water from the Cimarron River, expecting 800 acre feet (Tr. 1728), and that, as mentioned earlier when the users were discussed in detail, several other sources are available. There was evidence that the Vermejo Park Corporation, Kaiser and the Vermejo Conservancy District all have other water sources. The Master does not mean to imply that these alternate sources should and will be total replacements for the water from the Vermejo River. They are not sufficient for that purpose. They merely serve to "relieve the demand" for Vermejo River water, which water is not denied in its entirety to New Mexico users, nor will it be with the proposed Colorado diversion.

III

**THE EXTENT TO WHICH REASONABLE
CONSERVATION MEASURES IN BOTH
STATES MIGHT ELIMINATE WASTE AND
INEFFICIENCY IN THE USE OF WATER FROM
THE VERMEJO RIVER**

Conservation In New Mexico

To some extent conservation measures have been raised in the previous area of fact finding. Aside from major projects which would improve the conservation of Vermejo River water, the most important element is administration. The contrast earlier between the regulation and control in the two states should again be reviewed by the court. New Mexico argues that its users have no need for "government surveillance." (Defendants' Brief on Remand, p. 47). The Master is not suggesting "surveillance" in a manner oppressive or intrusive, but instead monitoring, regulating and controlling the system in an effort to determine more accurately actual use, and to decrease nonuse, waste and general inefficiency.

More careful administration in New Mexico might also alleviate some of the other problems causing water shortages or loss. One such problem is unregulated stockponds, fishponds and water detention structures. (Colo. Ex. No.s 38, 40). While there is no question that such water use is to a certain extent necessary and beneficial, some sort of restrictions should apply. The numbers of ponds and other structures might be limited; when appropriate, reuse should be developed; and, the extent of water diverted to these areas should be in some way monitored or controlled. There is some indication by New Mexico that approximately 2,024 stockponds exist in Colfax County. (Defendants' Brief on Remand, p. 53). Reduction and/or regulation of some type could not help but be an effort, however small, to conserve the water supply and put it to beneficial use.

There is at least some evidence in reports from the Bureau of Reclamation that available runoff is not being diverted because dams and supply canals are blocked with silt and other debris. (Colo. Exs. No.s 38, 40, 43; Tr. 2200). Proper administration would make users aware of the diversion problem and perhaps the state and its users together could find means to clean up the canals and prevent further clogging.

Another problem contributing to water waste and inefficiency is the inability to control headgate spills, divert all the water available, and fully develop all available stream sources. (Tr. 1830-1834, 1913-1914). Perhaps repair or revision of the necessary structures is all that is needed, or perhaps resort to a project of more complicated construction is necessary. The Master does not mean to suggest that burdensome and unreasonable efforts are required to be undertaken by New Mexico; however, reasonable repair based on careful development and administration could further reduce water shortages caused by inefficiency and waste.

One final problem area which the Master believes could be improved with proper administration is the failure of many users to devote sufficient time to the complete development of available water resources. Water shortages are a reality in arid western states and, therefore, water conservation is a task that must involve serious effort and attention together with large amounts of time and financial input. The Master understands the intense feelings that some of the individual users have for their land and their lifestyle (See Tr. 2192, 2206, 2215-16); the Master also understands that farming or ranching often needs to be supplemented by other sources of income and, therefore, other jobs. (See Tr. 2207). However, New Mexico users, individuals, or otherwise, cannot expect to be able to take the available water in the Vermejo River at their convenience without taking the time and energy to implement changes and development to help conserve and augment the available water. Careful monitoring and regulation as part

of a program of administration would aid all users in full development of their water supply and demands.

At the heart of New Mexico's water problem is the Vermejo Conservancy District. Whether lack of administration, lack of diligence, lack of resources or lack of ability is the cause, there is little doubt that the District has failed as a water reclamation project and has serious financial and operational problems of its own. (Tr. 164-169). Several of the conservation problems already discussed are present in the District. Furthermore, there is a problem of loss through evaporation in the District's seven reservoirs. (Tr. 863, 1296-1299). The District has a 32% efficiency to farm headgates and an overall system efficiency of 24.6%. (Tr. 2576). New Mexico claims that the District falls middle range in reclamation project efficiencies. (Tr. 1410-1411). However, the existence of other low efficiency systems is not justification for failure to fully develop water sources here. New Mexico argues that Colorado has merely pointed out areas of inefficient water use without making viable suggestions which would reduce or eliminate the inefficiency. It is the opinion of the Master that New Mexico's inefficient water use should not be charged to Colorado.

As for major projects concerning water conservation, New Mexico is to be commended. A closed stockwater system has been completed since the start of this trial. The effort to provide funding and construction has been considerable. Users of the system hope to conserve nearly 2,000 acre feet of water. (Defendants' Brief on Remand, pp. 43-45). There seems little point in further discussion of the benefits of a closed system. The system exists and its benefits are to be felt by New Mexico users. New Mexico claims, however, that the water conserved by the system is needed by New Mexico users. The Master is of the opinion that based on the evidence in its entirety, there is already sufficient water if New Mexico would take every opportunity to develop their

resources fully. With proper conservation measures, there is an adequate water supply to satisfy the needs of all users.

Conservation Measures in Colorado

New Mexico argues that the tentative nature of the plans of C F & I for design and diversion make it impossible to conclude that Colorado's conservation measures are sufficient. (Defendants' Brief on Remand, pp. 54-55). However, since Colorado is not presently using Vermejo River water, it is difficult to do more than consider Colorado's proposed uses and the proposed conservation measures which would accompany those uses. Administration being one consideration, the Court might refer back to the testimony of Colorado's state engineer relating to regulation and control of Colorado water users. It appears from that testimony that Colorado keeps a fairly close monitor on its users. This cannot help but be an aid to water conservation.

Testimony also reveals that Colorado intends to use and reuse much of the water diverted from the Vermejo River. Agriculture, timber operations, energy development, and industry are a few examples of the type of use. The contention is that for agricultural use the efficiency will be 60-75%. (Tr. 738-749).

There is no reason to doubt the validity of Colorado's proposals or intentions. Even if the actual does not comport with the ideal, it is not for the Master or for New Mexico to say that reasonable attempts to conserve water will not be implemented by Colorado. The strict administration of water already on display in Colorado increases the likelihood that the proposed measures will be implemented at least to a reasonable degree.

IV

**THE PRECISE NATURE OF THE PROPOSED
INTERIM AND ULTIMATE USE IN
COLORADO OF WATER FROM THE
VERMEJO RIVER, AND THE BENEFITS THAT
WOULD RESULT FROM A DIVERSION TO
COLORADO**

During the course of the trial, Colorado gave a considerable amount of evidence concerning the proposed uses of Vermejo River water in the state. Worthy of brief mention is the proposed interim use, to be implemented until industrial and other uses can be fully developed. Colorado proposes to temporarily use the diverted Vermejo River water for irrigation of 2,000 acres of agricultural land owned by C F & I. Plans to use and reuse the water as it flows down the valley result in a high efficiency expectation. (Tr. 744-746).

During the interim period more permanent uses of the water will be put into operation. The permanent uses include: a water powered hydroelectric plant generating power for a sawmill and related timber operations; coal washing at C F & I coal mines which would save transportation of the waste material from the mines to Pueblo, Colorado as well as development of additional coal mines; domestic and recreational purposes; possible synthetic fuel development; and, supplementation of current inadequate water supply in Colorado, including both C F & I uses as well as city and conservancy district (irrigation) shortages. (Tr. 738-749, 795-96, 623-639, 654, 656).

In response to these proposals set forth by Colorado, New Mexico argues that they are speculative, unproven and indefinite in nature. Projected costs are tenuous to nonexistent. Furthermore, on an agricultural comparison, New Mexico claims that Colorado has no benefit which could serve to outweigh the benefit

of the water used in New Mexico and, therefore, its subsequent loss. (Defendants' Brief on Remand, pp. 55-63).

This area of fact finding is one of the most difficult because of the necessarily speculative nature of benefits to be experienced by one not currently using the water. A further problem which faces Colorado in this area of testimony is the natural reluctance to spend large amounts of time and money developing plans, operations and cost schemes if the proposals are going to be made impossible should water not be diverted.

The Master has viewed the evidence on this question with these problems and restrictions in mind, and concludes that the benefits to be experienced by Colorado upon the development of Vermejo River water are substantial. Beginning with interim use, the argument is raised that the use is not cost efficient or justified. Testimony on behalf of Colorado did not deny the contention, and it is precisely this inability to fully and efficiently develop the interim use that makes the use temporary and not permanent. However, whether the project is totally cost efficient or not, the efficiency of water use based on repeated application is very high, and the benefits gained by the agricultural land because of additional water, however temporary, are undeniable.

As for the permanent uses, there is no way for the Master or the Court to know, even with more definite plans and projections, how many of the uses would be developed to a final stage of operation. However, this difficulty cannot be allowed to prevent Colorado from receiving its rightful supply of water. In spite of the speculative nature of the proposals and benefits, the Master believes that there is enough evidence to justify diversion of Vermejo River water to Colorado resulting in considerable benefits. Looking back to the list of proposed uses, if even half of them are fully implemented, Colorado would benefit from the Vermejo water. One of the more important uses, which is certain to occur, is that the water appropriated from the Vermejo River will supplement the existing insufficient water supply

available to Colorado users. There seems to be little doubt that the Purgatoire River system is overappropriated, demand exceeding available supply. Any additional water would help to relieve shortages. C F & I and the city of Trinidad are but two examples of users that would benefit by having water available to meet their demands. (Tr. 535-538, 623-630, 795-96). There is some thought that the benefit of alleviating these shortages is sufficient to justify Colorado diversion of Vermejo water; however, Colorado's proposal does not stop with alleviating shortages but goes on with major plans for the water and thereby additional benefits. See proposed uses listed above.

Therefore, in light of the proposed as well as near certain benefits, considered together with the following issue of New Mexico injuries, it is the opinion of the Master that the evidence supports a finding that the Colorado uses are sufficiently weighty to allow an appropriation of Vermejo water.

V

THE INJURY, IF ANY, THAT NEW MEXICO WOULD LIKELY SUFFER AS A RESULT OF ANY SUCH DIVERSION, TAKING INTO ACCOUNT THE EXTENT TO WHICH REASONABLE CONSERVATION MEASURES COULD OFFSET THE DIVERSION

The State of Colorado argues that the injury of New Mexico, if any exists at all, could be alleviated by implementation of reasonable conservation measures. It is noted that there is some contention on the part of Colorado that there is sufficient water for all users (including Colorado) now if the uses were fully and efficiently developed. (Plaintiff's Brief on Remand, p. 52).

However, New Mexico raises several points arguing that the injury would be substantial and no reasonable or feasible conservation measures are available to mitigate that injury. The Master presents several of New Mexico's points with brief comment.

New Mexico points out the benefits which result from the use of Vermejo River water, arguing that upon Colorado diversion, users will have to find other more costly sources of water or avoid water use altogether. However, this argument is unnecessary since neither the Master nor Colorado contends that New Mexico fails to benefit from Vermejo River water. Everyone agrees that the benefits exist. The Master merely points out that these benefits are not being taken away from New Mexico by the Colorado diversion. In the first place, it is not as if all the Vermejo River water was to be diverted by Colorado; as best can be determined from all available evidence, only about one-third of the total divertable water in the Vermejo River would be diverted by Colorado. And secondly, as the Master has pointed out throughout these findings, reasonable conservation measures on the part of New Mexico could increase its available supply of water to a point where the Colorado diversion might not have any impact at all. New Mexico cannot be allowed to neglect implementation of reasonable administration and conservation measures and at the same time complain that Colorado is denying it the benefit of water from the Vermejo system.

New Mexico discusses the growth and development of Colfax County as a result of the Vermejo benefits. The growth occurred in "the decade of the 1970's." (Defendants' Brief on Remand, p. 67). However, in earlier discussion of historic water uses and supply, the decade of the 70's was labelled a drought period. (Tr. 2211-2213, 1179, 1193). The Master does not find the need to speculate or determine the accuracy of these positions, but merely notes that they do not appear to conform.

New Mexico claims injury through Kaiser Steel which accounts for a portion of county employment. New Mexico states that the York Canyon mine is Kaiser's sole operation, and all activities at that mine are dependent on the Vermejo. However, the accuracy of that statement is doubtful in the Master's mind. The testimony indicated that the failure of Kaiser to develop the full allotment of their water was the development of the mine at York Canyon. (Tr. 1727, 1746-47; Defendants' Brief on Remand, p. 16). Furthermore, Kaiser has two diversion points, one in York Canyon at the mine site and one directly on the Vermejo River. The first point of diversion in York Canyon diverts water *not yet meeting* the Vermejo River. If water is not diverted at the York Canyon site, it flows to the second diversion point on the Vermejo or on past to other Vermejo users. (Tr. 1742-44). Approximately 25% of the water used by Kaiser comes from the first diversion point (Tr. 1744), water which has not yet reached the Vermejo River and, therefore, cannot be affected by diversion of water from the Vermejo River in Colorado. The injury then is not as all encompassing as has been represented and in fact may be little injury at all.

New Mexico contends that in dry years its injury will be even greater because in those years Colorado will take all of the water with its share. It should be noted that a large portion, close to three-fourths of the water used by New Mexico Vermejo River users, is produced in Colorado. However, some of that production occurs in Colorado *after* the Colorado point of diversion. (See. Colo. Ex. No. 5, fig. 1). Thus, Colorado's use, like that of New Mexico, is subject to variations in the natural water supply, wet years providing substantial water and dry years resulting in some shortages and greater need for careful use.

Further argument is made by New Mexico that the injury is divided among all users, negative effects reaching each type of water application in New Mexico, and that there is nothing to offset the alleged shortage from Colorado diversion. However,

testimony of New Mexico's witness indicated that the shortage caused by a Colorado diversion would be felt *primarily* by the Vermejo Conservancy District. (Tr. 1323). As noted earlier, the District has a reservoir system allowing carryover from wet years to supply water during periods of shortage. Therefore, the user most affected *does* have a means of offsetting the possible shortage. Furthermore, the Master notes once again that with reasonable and careful conservation measures the possible shortages may not exist at all.

The injury, New Mexico fears, may even extend to the federal government, to whom the Vermejo Conservancy District owes in excess of two million dollars. However, such a state of affairs would be nothing new in this case. From the beginning the District has had problems making their payments. (Tr. 168; Plaintiff's Ex. No. 38, Plaintiff's Ex. No. 6, p. 9). Remedies from reduced payments to bills in the legislature relieving the District of payments altogether have been proposed. In this light, it hardly seems reasonable or accurate to blame the District's debt default on the proposed Colorado diversion.

Finally, New Mexico presents an impressive array of figures allegedly representing the economic injury resulting from reduced water supply. However, for the most part these figures presuppose that no Vermejo River water is available for New Mexico users, and such is not the case even if New Mexico does not implement any additional conservation measures. Colorado would be diverting less than one-half of the water *it*, as a state, produces. New Mexico users of Vermejo water are not suddenly faced with a dry riverbed; water still flows through New Mexico in the Vermejo River and its tributaries. Furthermore, at the risk of becoming redundant, the Master once more points out that *reasonable* conservation measures, primarily in the form of administration, are available to New Mexico, and should they be implemented would reduce New Mexico's "loss" to insignificance.

For the above-stated reasons the Master concludes that "the injury, if any, that New Mexico would likely suffer as a result of [the] diversion, taking into account the extent to which reasonable conservation measures could offset the diversion," is insubstantial and does not outweigh the benefits which Colorado would gain as a result of the Vermejo diversion.

CONCLUSION

In conclusion the Special Master finds that the following points, detailed above are supported by clear and convincing evidence:

1. The existing uses of Vermejo River water are beneficial and numerous. While historical shortages are present, the current levels of use primarily reflect failure on the part of existing users to fully develop and put to work available water.

2. The available supply of water from the Vermejo River is sufficient for current New Mexico users, and with reasonable conservation measures would meet the needs of Colorado users as well. The available water supply can be enhanced through diligent and complete development of the Vermejo source as well as alternative sources. Many current users do not require a continuous supply and systems of reservoirs provide relief for those who do.

3. Reasonable conservation measures in both states would go far in eliminating nonuse or inefficiency, resulting in a greater supply of water. While New Mexico has implemented some major conservation measures, administration is an area in which improvement would touch on many aspects of conservation and water use development.

Reasonable conservation measures in Colorado would also serve to enhance water supply. The evidence presented by Colorado leaves little doubt that such measures will be implemented.

4. Colorado's proposed interim use is agricultural in nature, with more permanent uses developed in industry, energy production, recreation and domestic areas. Furthermore, water shortages and instances of overappropriation in Colorado would be relieved by a Vermejo diversion. Colorado would benefit greatly from the additional water even if only a portion of the proposed uses were implemented.

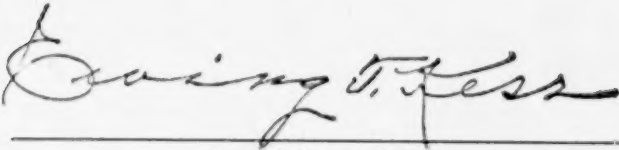
5. The injury, if any, to New Mexico resulting from the Colorado diversion could be offset by reasonable conservation measures.

As a final consideration, the Master examines the equities of this case. The evidence revealed that Colorado produces approximately three-fourths of the water in the Vermejo system. As mentioned previously, a portion of that water is produced in Colorado *after* the proposed point of diversion. Even with the proposed diversion, New Mexico would still be the recipient of one-half of the water produced in Colorado and approximately two-thirds of the water produced in the entire system.

Evidence supports the finding that New Mexico's injury as a result of this diversion is nonexistent or could be easily offset by reasonable conservation measures. In addition, the equities are with Colorado, which requests only a portion of the water which it produces.

On the basis of the foregoing the Special Master reaffirms his original recommendation made in the report of December 31, 1981.

Dated at Cheyenne, May 31, 1983.

A handwritten signature in cursive script, reading "Ewing T. Kerr". The signature is written in dark ink and is positioned above a horizontal line.

EWING T. KERR
Special Master

*Federal Building
2120 Capitol Avenue
P.O. Box 888
Cheyenne, Wyoming 82003*

APPENDIX

TABLE 2

Monthly and Annual Discharge of the Vermejo River near Dawson, New Mexico (in acre-feet)

Water Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Annual
1916	615	604	967	515	665	452	819	2,730	498	961	7,470	1,270	17,000
1917	796	466	393	357	311	212	388	5,760	2,330	1,820	659	551	14,040
1920	1,190	503	916	692	962	1,090	544	2,030	2,180	1,830	1,500	1,793	14,230
1928	484	356	92	200	306	308	688	2,490	2,460	1,660	2,610	208	11,860
1929	362	285	215	209	222	277	476	2,040	1,630	350	6,430	2,500	17,000
1930	984	714	553	361	478	543	1,740	1,700	1,040	2,470	3,640	1,060	15,280
1931	1,370	405	214	222	387	700	1,350	4,940	1,880	1,120	902	883	14,400
1932	395	125	105	230	458	244	754	3,560	1,950	1,320	1,630	764	11,500
1933	389	262	135	119	335	470	303	2,050	2,360	1,990	1,160	419	9,990
1934	151	196	186	274	411	514	698	952	553	520	833	141	5,430
1935	97	160	146	236	181	211	258	2,120	1,870	1,060	1,790	1,680	9,830
1936	451	334	174	220	230	231	645	1,250	969	935	1,910	835	8,180
1937	486	288	171	83	334	399	3,570	3,770	3,210	1,950	1,800	635	16,700
1938	364	168	154	132	95	134	2,070	4,780	2,640	1,900	2,370	2,500	17,310
1939	2,240	496	328	212	164	724	1,380	1,830	828	608	965	264	10,040
1940	232	189	138	151	312	311	282	1,250	705	1,100	6,480	776	11,930
1941	286	239	347	375	348	986	3,360	22,900	10,050	6,070	3,500	4,430	52,890
1942	3,170	1,820	670	811	645	914	22,030	17,250	5,380	3,560	3,500	4,670	64,420
1943	1,380	936	730	833	739	542	197	639	223	663	2,770	598	10,240
1944	422	292	340	369	455	447	1,420	6,800	3,210	2,430	948	390	17,520
1945	452	317	301	310	392	243	188	1,900	1,130	1,180	2,540	275	9,230
1946	279	167	90	141	179	357	293	146	38	703	3,570	1,380	7,340
1947	371	432	293	158	212	242	316	5,110	926	1,610	2,420	901	12,990
1948	507	301	292	360	582	887	1,930	7,640	4,670	1,750	1,120	144	20,180
1949	340	276	113	225	337	228	472	2,050	2,830	2,980	1,900	1,530	13,280
1950	345	315	158	278	195	108	120	82	315	2,800	478	207	5,400
1951	83	53	62	74	89	49	79	252	234	206	276	22	1,480
1952	9.1	2.4	36	94	69	68	263	2,090	1,620	303	1,040	611	6,210

TABLE 2 (Continued)

Water Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Annual
1953	70	60	87	168	135	156	142	1,010	855	1,690	1,200	136	5,710
1954	79	208	191	187	164	111	79	652	204	759	613	91	3,340
1955	33	25	38	60	110	94	72	8,240	2,990	2,530	9,010	1,730	24,930
1956	624	352	422	338	185	132	101	355	203	342	582	26	3,360
1957	9.5	8.7	109	133	95	70	244	2,050	3,830	3,800	4,760	1,030	16,140
1958	1,090	752	724	522	463	581	4,150	10,610	3,830	2,080	1,690	765	27,260
1959	301	440	462	331	378	304	328	500	1,130	418	1,410	154	6,160
1960	266	227	229	233	252	375	459	469	740	1,930	559	179	5,890
1961	1,440	370	293	215	240	454	2,370	3,580	2,410	2,450	4,590	1,510	19,910
1962	824	741	461	429	568	483	2,690	2,310	1,020	1,660	1,130	593	12,920
1963	371	291	195	118	297	276	253	124	121	114	899	2,540	5,600
1964	149	249	194	104	213	296	502	806	431	329	419	36	3,730
1965	56	77	127	197	176	248	347	3,920	10,540	2,200	3,950	1,060	23,010
1966	385	387	450	290	333	377	229	455	490	1,400	3,940	1,350	10,080
1967	305	330	250	404	361	227	88	59	222	1,850	2,550	1,780	8,440
1968	468	450	300	429	683	576	482	3,440	2,420	2,290	2,380	452	14,380
1969	293	317	344	402	324	354	428	1,040	914	2,870	2,340	1,520	11,150
1970	980	642	393	355	330	259	1,800	3,050	1,450	2,030	1,160	581	13,030
1971	510	474	263	237	270	257	97	268	106	1,260	1,120	803	5,660
1972	459	401	323	288	242	154	223	207	91	641	985	663	4,680
1973	140	215	159	150	195	299	1,950	3,630	3,150	1,640	865	534	12,920
1974	308	244	173	296	298	267	112	242	197	157	537	206	3,040
1975	174	137	40	40	134	228	424	1,400	1,410	2,690	662	194	7,530
1976	75	103	166	149	169	112	116	616	540	2,270	1,130	1,200	6,640
1977	129	126	86	91	165	222	458	337	496	2,110	3,490	182	7,900
1978	111	250	211	207	159	160	173	1,710	1,590	2,980	986	121	8,650
1979	107	271	185	191	214	230	426	3,240	3,830	1,860	1,650	372	12,570
Sum Average													710,830 12,919

Data source: Official publications of the U.S. Geological Survey.

EWING T. KERR
DISTRICT JUDGE

UNITED STATES DISTRICT COURT
DISTRICT OF WYOMING
P. O. BOX 888
CHEYENNE WYOMING 82001

August 16, 1983

RECEIVED

AUG 19 1983

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Mr. Alexander Stevas, Clerk
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Washington, D.C. 20543

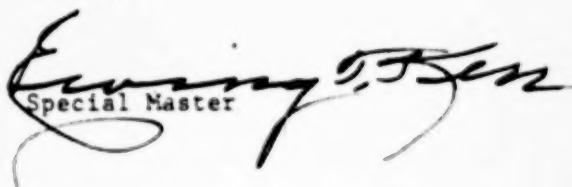
Re: State of Colorado v. State of New Mexico
and Paul G. Bardacke, Attorney General
of the State of New Mexico
No. 80, Original

Dear Mr. Stevas:

I am enclosing herewith Narrative Tender of
Evidence and Requested Findings Of Fact And Conclusions
Of Law, submitted by the State of New Mexico.

The Supreme Court in its decision left to the
discretion of the Special Master whether additional testimony
should be taken or make the additional findings based upon
the existing record. The Special Master elected not to take
additional evidence.

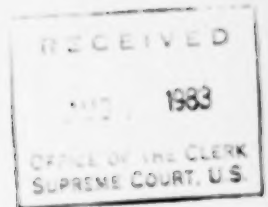
Sincerely,


Special Master

ETK/ks
Enclosure

cc: Mr. William A. Paddock
Mr. Robert F. Welborn
Mr. Peter T. White
Mr. Richard A. Simms

IN THE
SUPREME COURT OF THE UNITED STATES



THE STATE OF COLORADO,

Plaintiff,

vs.

No. 80, Original

THE STATE OF NEW MEXICO,
and PAUL BARDACKE, ATTORNEY
GENERAL OF THE STATE OF
NEW MEXICO,

Defendants.

NARRATIVE TENDER OF EVIDENCE
AND REQUESTED FINDINGS OF FACT
AND CONCLUSIONS OF LAW

Introduction

In our Motion to Receive Evidence of March 5, 1983, we requested that the Master fulfill his obligation to the Court by receiving additional evidence with respect to the stockponds in the Vermejo River drainage, the newly completed stock water delivery system, and measured flows in the main canal of the Vermejo Conservancy District. The evidence consists of relevant events which occurred after trial and new factual data which were published after trial by the U.S.G.S. It remains our belief that the evidence is essential to a complete, objective understanding of the evidence presented at trial and that the new factual data are essential to an accurate development of the facts in the specific areas in which the Court has requested findings of fact. Colorado v. New Mexico, 103 S.

Ct. 539 (1982).

On April 8, 1983, the Special Master denied the State of New Mexico the opportunity to present the evidence. As indicated in our letter of April 13, 1983, we are hereby submitting an offer of proof in order to preserve our right to show the Court that substantial rights of the State of New Mexico will have been affected by the Master's decision to exclude the evidence. In order to make the substance of the evidence known to the Master and to the Court, the nature and significance of the evidence is explained herein, the proposed testimony has been reduced to the attached affidavits and accompanying exhibits, and the post-trial U.S.G.S. publications and data compilations are enclosed herewith as additional exhibits.

Stockpond Evidence

Prior to trial the State of Colorado and the State of New Mexico agreed to the stipulated admission of numerous documents published by state and federal agencies. On the first day of trial, New Mexico explained that it had not agreed to the admission of certain of Colorado's proposed exhibits because their admission without testimony precluded cross-examination.

The exhibits that we singled out were Bureau of Reclamation letters and documents which repeat a reference to the opinion of a former Vermejo Conservancy District official that "the numerous water detention, stockwater, and fish pond structures which have been constructed during the last 20 years...[were] the primary causes of the [District's] water shortage." See, e.g.

Colo. Ex. No. 37, p. 1. At the time, we knew that the number of such structures in the Vermejo drainage was small and that the amount of Vermejo water they depleted was insignificant, but we had no factual data available to present to the Master.

In 1982, in cooperation with the U.S.G.S., the New Mexico State Engineer published Technical Report No. 44. The report includes water depletions by county from stockpond evaporation. See, N.M. Ex. No. P-53, Table 4. Based upon the data compiled in Technical Report 44, it was possible to estimate the depletion to the Vermejo River above the Vermejo Conservancy District's diversions due to stockponds. Using the data, we estimated an annual depletion of 170 acre-feet. See, Defendants' Brief on Remand, pp. 52-53 and Affidavit of Eluid L. Martinez, p. 2.

Following our initial estimation we undertook a hydrographic survey of all of the stockponds in the Vermejo River system in New Mexico above the Vermejo Conservancy District diversions. The survey was conducted by experienced surveyors under the direction of Eluid Martinez, a registered professional engineer and land surveyor and Chief of the Hydrographic Survey Section of the New Mexico State Engineer Office. See, Affidavit of Eluid L. Martinez, pp. 1-2. All of the ponds were identified and located in the survey. A representative sample of the stockponds (31%) was surveyed in the field by planetable mapping to delineate maximum water surface area and depth of the ponds. Volume was also determined.

The facts are as follows: 1) there is a total of 80 stockponds

in the entire Vermejo River drainage in New Mexico above the Vermejo Conservancy District's diversions; 2) there are no unadjudicated "fishponds" or unauthorized flood control structures in the Vermejo River drainage in New Mexico; 3) the aggregate capacity of all stockponds in service at maximum water surface level is calculated to be 212 acre feet; and 4) while the actual depletion is less, the maximum annual depletion from all of the stockponds ranges from 182 to 192 acre feet. See, generally, Affidavit of Eluid L. Martinez, pp. 2-4.

These facts contrast with Colorado's exploitation of a single statement, repeated in a number of Bureau of Reclamation letters, expressing the unfounded fear of a former official of the Vermejo Conservancy District. Colorado's evidence has no factual support in the record. The factual data we are offering establishes unquestionably that there is no proliferation of unregulated stockponds in the Vermejo system and that the depletion from the existing ponds is insignificant.

Stockwater System Evidence

When trial was completed, the status of the closed stockwater delivery system was still uncertain. The necessary funding had not been obtained, and the repayment burden on the member-users of the Maxwell Cooperative Water Users Association was not known. Notwithstanding that the record is incomplete in this regard, Colorado has divined the future with considerable license. For example, in its Reply Brief of the State of Colorado, Colorado

explained that "public money is available to finance the closed system for the delivery of stockwater." Id., at p. 52.

We are tendering evidence in this regard to complete the record with respect to an area in which there is considerable debate before the Master and the Court. Our objective was to enable the Court to render a decision based on the facts that actually transpired as opposed to groundless, argumentative conjecture.

As explained in Defendants' Brief on Remand, the farmers in the Vermejo Conservancy District, as well as the neighboring water users within the area embraced by the Maxwell Cooperative Water Users Association, initiated efforts to construct the enclosed system long before this suit was filed. Id., pp. 42-45. The purpose of the endeavor was to salvage water needed to relieve historic irrigation shortages. Tr. 1362.

The funding for the project was not obtained until May, 1982. The amount of funding was \$546,884.93, received from the New Mexico Environmental Improvement Division, the United States Agricultural Stabilization and Conservation Service, and the Farmers Home Administration. The New Mexico water users are obligated to repay \$220,000.00 of the total amount. See, Affidavit of Leonard S. Knox, Jr., p. 3.

Following funding, the necessary water right transfer applications were filed with the New Mexico State Engineer. Application Nos. CR-1333 and CR-1333-S were approved on July 21, 1982. Construction was begun on September 27, 1982 and is now

completed. Ninety-nine water meters have been installed to monitor both the livestock and domestic uses. See, Affidavit of Leonard S. Knox, Jr., pp. 3-4.

The completion of the system culminates over ten years of work by New Mexico water users to conserve their water supply. Use of the closed system will assist the Vermejo Conservancy District to more efficiently distribute water to its members, to achieve financial stability by producing crops on acreage left fallow as a result of historic shortages in water supply, and to repay its debt to the United States.

Evidence Derived from Measured
Flows in the Vermejo Canal of the
Vermejo Conservancy District

At trial there was conflicting evidence relating to the amount of water flowing past the Vermejo Conservancy District's headgate, i.e., the amount of water available to the downstream Canadian River users, who, without contradiction in the record, are 13% short of supply historically. Tr. 1368-78. There were also conflicting contentions as to the amount of water divertible by the Vermejo Conservancy District. Using New Mexico exhibits, Colorado asserted that "the District's diversion structure is capable of diverting the entire flow of the Vermejo River just below the Dawson gauge some 99.9% of the time...." Reply Brief of the State of Colorado, p. 65, citing N.M. Ex. Nos. F-18, D-1. New Mexico responded through the testimony of its experts. Mr. Mutz testified that the figure of 99.9% is only superficially impressive because the

flow duration exhibit from which it was taken was compiled on the basis of mean daily flows and not peak flows. Tr. 1131. Similarly, Mr. Ochs, the Bureau of Reclamation official responsible for the Vermejo Conservancy District, testified that at best 64% of the water at the District's diversion dam and headgate was divertible because the remaining quantity is in the peak flows. Tr. 1670-1677.¹

As trial was beginning, a gage was installed on the Vermejo Canal of the Vermejo Conservancy District, just above Stubblefield Reservoir. In February, 1982, published records became available for the water year 1981. With this post-trial U.S.G.S. publication, it was possible for the first time to compare the flows in the river with the actual, divertible flows.² See, Affidavit of Philip B. Mutz, p. 1; N.M. Ex. No. F-54. Also, in April of this year, the U.S.G.S. provided New Mexico with the provisional records for the water year 1982.³ N.M. Ex. No. F-55.

The facts now available show that in August and September of 1981 approximately 5500 acre-feet spilled past the Vermejo

- ¹ Notwithstanding the undisputed testimony in the record that the water that passes the Vermejo Conservancy District's headgate is captured and regulated in Conchas Reservoir for application to beneficial use in the Bureau's Tucumcari Project, the Master concluded that "there was no competent evidence of any dependency on Vermejo water by users downstream from the Vermejo Conservancy District." Report p. 4. Without contradiction, the record does not support this finding.
- ² As the Master is aware, Colorado equated all water "produced from the watershed" above the headgate as divertible and "available" to the Vermejo Conservancy District. Tr. 416; see, Defendants' Brief on Remand, Point II. Because Colorado's case depends on this equation, it is understandable that Colorado objects so vehemently to the admission of factual data that proves the contrary.
- ³ While these data are "provisional," they will be published this coming February likely without change. See, Letter from William Dein, Subdistrict Chief, U.S.G.S., N.M. Ex. No. F-54.

Conservancy District's headgate in the form of peak flood flows, i.e., the flows not embraced within Colorado's deceptive use of the flow duration time of 99.9%, and in August and September of 1982, approximately 4000 acre-feet spilled. A total of approximately 9500 acre-feet of Vermejo River water thus contributed to the supply of users on the Canadian River in these two years. See, Affidavit of Philip B. Mutz, pp. 2-3. While the amount of water in the Vermejo River at the Dawson gage from June through September, 1981 and from May through September, 1982 was 23,960 acre feet, the amount of water actually divertible to the Vermejo Conservancy District was 12,490 acre feet; 1970 acre feet of depletion occurred between the Dawson gage and the Vermejo Canal gage, and 9,500 acre feet spilled past the Vermejo Conservancy District's diversion dam and headgate in the form of short duration flood flows.

Based upon the actual recorded flow in the river and the actual recorded flow in the Vermejo Canal, Mr. Mutz prepared the two hydrographs attached to his affidavit. The hydrographs vividly show the difference between Colorado's "available" water supply and the actual, divertible supply. With equal vividness the hydrographs show the quantitative contribution from the Vermejo to the Canadian, albeit that these quantities passed the District's headgate during very brief periods of time. See, N.M. Ex. Nos. F-56 & F-57.

Conclusion

With due respect for the Master's decision to exclude this evidence, we have made this offer of proof because the present record is incomplete and factually inadequate. We hereby renew our request that the Master make available to the Court a full presentation of the relevant facts by permitting New Mexico to present evidence in these areas.

Proposed Findings of Fact

1. The total number of stockponds in the Vermejo River watershed in New Mexico above the Vermejo Conservancy District's diversion is 80.
2. There are no unadjudicated fishponds, or unauthorized flood control structures in the Vermejo River watershed in New Mexico.
3. The aggregate capacity of all of the stockponds in the Vermejo River drainage above the Vermejo Conservancy District's diversions in New Mexico is calculated to be 212 acre feet.
4. The maximum annual depletion of Vermejo River waters from all of the stockponds above the Vermejo Conservancy District's diversions in New Mexico ranges from 182-192 acre feet.
5. The stockponds that exist in the Vermejo River watershed in New Mexico are necessary to maintain the existing livestock industry in Colfax County.
6. Many years before this lawsuit was filed the New Mexico water

users in the Maxwell area and the Vermejo Conservancy District undertook to design, finance, and construct a closed stockwater delivery system to salvage water needed to relieve historic irrigation shortages to the Vermejo Conservancy District.

7. After formally associating for the purpose of negotiating for and obtaining funding for the project, in May, 1982 the Maxwell Cooperative Water Users Association received \$546,884.93 from the New Mexico Environmental Improvement Division, the United States Agricultural Stabilization and Conservation Service, and the Farmers Home Administration.
8. Of the capital cost of the closed stockwater delivery system of \$546,884.93, the New Mexico water users are obligated to repay \$220,000.00.
9. After the requisite water right applications were filed, processed, and approved by the New Mexico State Engineer, construction of the closed stockwater system was begun on September 27, 1982 and is now completed.
10. Because of historic water shortages, the farmers of the Vermejo Conservancy District have been forced to leave some of their land fallow and have been unable to make crops on planted lands.
11. The closed stockwater system was envisioned and ultimately constructed by the New Mexico water users in reliance upon anticipated water salvage.
12. Use of the water salvaged by the Vermejo Conservancy District farmers is necessary to achieve financial stability by

producing crops on acreage left fallow as a result of limited water supply and to repay its debt to the Bureau of Reclamation.

13. The effort undertaken by the New Mexico water users to conserve Vermejo River waters through the construction of a closed stockwater system was not initiated to make a gift of the water salvaged to a steel corporation in Colorado.
14. With the publication by the U.S.G.S. of measured flows in the Vermejo Canal of the Vermejo Conservancy District in February, 1982, it became possible to compare the gaged flows in the river at the Dawson gage and the flows capable of diversion by the Vermejo Conservancy District.
15. The difference between the recorded flows at the Dawson gage and the recorded flows in the Vermejo Canal approximates the amount of water spilled at the Vermejo Conservancy District's diversion dam and headgate.
16. As a result of typical, short duration, high intensity thunderstorms in August and September of 1981 and 1982, the two years for which the comparative data are available, approximately 9,500 acre feet of Vermejo River water spilled past the Vermejo Conservancy District and contributed to the water supply of the users on the Canadian River.
17. Because significant quantities of water rise in the Vermejo River during short duration, high intensity thunderstorms, much of the flow recorded by the Dawson gage is not divertible.
18. Flood flows of considerable magnitude occur frequently in the

summer months in the Vermejo River watershed.

19. Based upon annually recurring climatological conditions, the hydrographs comparing the gaged Vermejo River flows at Dawson with the gaged flows of the Vermejo Canal of the Vermejo Conservancy District are representative of the flood flows and spills at the District's diversions.

Proposed Conclusions of Law


1. There is no proliferation of unregulated stockponds, fishponds, or other water detention structures in the Vermejo River watershed in New Mexico above the Vermejo Conservancy District's headgate.
2. All stockponds in New Mexico are subject to regulation by law.
3. The total depletion caused by all of the stockponds in the Vermejo River watershed in New Mexico above the Vermejo Conservancy District's diversions is insignificant in relation to the water supply and the shortages historically suffered by the Vermejo Conservancy District.
4. An equitable apportionment does not contemplate an award of all water conserved in one state to another state.
5. Equity requires that water conserved in reliance on anticipated water salvage needed to help offset historic water shortages be awarded to the water users who effected the conservation.
6. The use of the water salvaged by the stockwater delivery

system is within the water right entitlement of the Vermejo Conservancy District.

7. If the Vermejo Conservancy District is not able to use the water salvaged by the closed stockwater delivery system, its ability to repay its contractual obligation to the United States will be impaired.
8. Equity does not contemplate a vicarious award to Colorado Fuel & Iron Steel Corporation of the waters conserved by New Mexico water users to help relieve historic shortages in supply.
9. Recorded annual flows in the Vermejo River cannot be used to determine the amount of water available or divertible by the water users.

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CERTIFICATE OF SERVICE

I, Richard A. Simms, of counsel hereby certify that I am a member of the bar of this Court and that on May 13, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be mailed the requisite number of copies of the foregoing Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law prepaid, to the following officials of the State of Colorado:

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The Honorable J. D. MacFarlane
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I certify that on May 13, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be served by first class mail, postage prepaid, the requisite number of copies of the foregoing Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law, on the following counsel of record:

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I certify that all parties required to be served have been served.


Richard A. Simms

FILED

AUG 11 1983

CLERK

IN THE
Supreme Court of the United States

OCTOBER TERM, 1983

STATE OF COLORADO, *Plaintiff*

v.

STATE OF NEW MEXICO
AND PAUL G. BARDACKE,
ATTORNEY GENERAL OF THE
STATE OF NEW MEXICO, *Defendants*

**EXCEPTIONS OF THE STATE
OF NEW MEXICO TO THE ADDITIONAL
FACTUAL FINDINGS OF THE
SPECIAL MASTER AND BRIEF IN
SUPPORT OF EXCEPTIONS**

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IN THE
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OCTOBER TERM, 1983

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ATTORNEY GENERAL OF THE
STATE OF NEW MEXICO, *Defendants*

**EXCEPTIONS TO THE ADDITIONAL FACTUAL
FINDINGS OF THE SPECIAL MASTER**

In *Colorado v. New Mexico*, ____ U.S. ____, 103 S. Ct. 539 (1982), the Court remanded this case to the Special Master to make " 'specific factual findings' relevant to determining a just and equitable apportionment of the water of the Vermejo River." 103 S. Ct. at 549. The Court held that the Master's first report, dated December 31, 1981, did not contain sufficient factual findings to permit review of his recommendation that Colorado be awarded 4,000 acre-feet per annum of Vermejo River water. 103 S. Ct. at 545. To assist the Master, the Court requested detailed findings in five areas, directing the Master to undertake a thorough, comprehensive, and objective analysis of all facts bearing on the issue of an apportionment of the river and stating that additional hearings could be held where necessary. 103 S. Ct. at 549, n. 14.

The Court imposed a heavy burden of proof on Colorado to provide evidence on which the Special Master could base specific findings in the five areas. "Colorado must establish not only that its claim is of 'serious magnitude,' " but also that its position is supported by "clear and convincing evidence." 103 S. Ct. at 548, n. 13. The Court held that [t]o the extent that the Special Master found that the mere fact that the Vermejo River originated in Colorado automatically entitles Colorado to a share of the water of the Vermejo River, "... we reject it as inconsistent with our emphasis on flexibility in equitable apportionment." 539 S. Ct. at 544, n. 8.

Upon remand, the Master immediately issued an Order requiring the parties to prepare briefs of the record. On March 5, 1983, New Mexico submitted a Motion to Receive Evidence. The Motion covered three evidentiary elements of the case which were directly relevant to the areas in which the Court had requested specific findings. The motion was denied.

New Mexico takes exception to the exclusion of the evidence contained in our Motion to Receive Evidence from the record and to the fact the Master failed to make the specific findings requested by the Court in the five categories. The Master has failed to comply with the Court's mandate of December 13, 1983, and Colorado has failed to sustain its burden of proof.

Specifically, New Mexico takes exception to the report in the following respects:

- (i) The Master's exclusion of evidence contained in our tender denied New Mexico its right to a hearing at which to present evidence of Vermejo River flows to the Canadian, depletions by stockponds, and the equities arising from the District's closed pipeline.

(ii) The Master's analysis of New Mexico's existing uses failed to take account of the Court's request that he determine the extent to which the existing uses were restricted by shortage or were not diligently developed. The Master's analysis began in 1973. He ignored New Mexico's evidence of the historical development of these rights.

(iii) The Master's discussion of the Vermejo River hydrology is in error in two respects. The Master relied upon average annual flows as his measure of practical availability, a method of analysis expressly rejected by the Court, and failed to comprehend the magnitude of the demand in comparing historic supply and demand. As a result, he concluded that certain acreage was left fallow in the 1970s because of lack of diligence as opposed to water shortage.

(iv) The Master generalizes about water conservation measures in New Mexico without specifically identifying any particular conservation measure and without discussing the economic or physical feasibility of any given measure.

(v) In discussing the nature of proposed interim and ultimate uses in Colorado, the Master concedes that specific findings cannot be made. As a result, he idealizes the proposed use in Colorado and criticizes the existing uses in New Mexico, basing his recommendations upon an inherently unfair double standard.

(vi) Based upon his failure to appreciate the demand in relation to the historic supply, the Master does not realize that he is recommending permanent injury to New Mexico by reducing its legitimate demand by the amount of water needed to irrigate 3,839 acres. He also fails to recognize that all of the existing uses in New Mexico would be injured in times of low flow and that the Canadian River users of Vermejo water

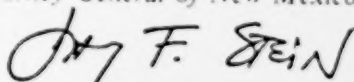
would be injured during times of flood flow. Accordingly, the Master mistakenly attributes little significance to the economic consequences in New Mexico of a diversion of 4,000 acre feet in Colorado.

(vii) The Master recommends restructuring priorities interstate to award the first priority to the most junior use without basis in law or equity.

WHEREFORE, the State of New Mexico requests that the Court reject the Special Master's reports of December 31, 1981 and May 31, 1983, to dismiss this action with prejudice to Colorado for failure to meet its burden of proof, and to enter its decree declaring that the factors the Court sought to have the Master consider do not warrant variation of the guiding principle of prior appropriation.

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IN THE
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OCTOBER TERM, 1983

STATE OF COLORADO, *Plaintiff*

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ATTORNEY GENERAL OF THE
STATE OF NEW MEXICO, *Defendants*

**BRIEF OF THE STATE
OF NEW MEXICO IN
SUPPORT OF EXCEPTIONS**

INTRODUCTION

In *Colorado v. New Mexico*, _____ U.S. _____, 103 S. Ct. 539, 546 (1982), the Court stated that it was New Mexico's view that it "is improper to consider" the various factors the Court discussed to determine whether to vary the application of priority of appropriation between priority states. New Mexico did not so contend, however. On the contrary, we maintained that given the facts of this case these factors are of no avail to Colorado.

The record shows that New Mexico presented extensive evidence on the historical uses of water from the Vermejo River, balancing periods of water shortage against the possibility of lack of diligence to make it possible to ascertain New Mexico's diligently developed entitlement. We presented extensive evidence on the need to adopt a standard of practical availability

as the measure of "available supply," accounting for flood flows, the possibility of regulating and conserving the supply, and the possibility of relieving the demand for Vermejo water with water from alternate sources. We also presented extensive evidence with regard to waste, inefficiency, and the economic and physical feasibility of conservation measures which might augment the supply in order to offset a new diversion in Colorado.

In New Mexico's opinion, the facts presented did not warrant variation of the guiding principle of prior appropriation, but rather compelled its application. By contrast, Colorado presented no analytically useful evidence in regard to any of the factors discussed by the Court and instead simply generalized, without specific factual support, about how New Mexico might offset a new diversion.

The Master adopted the generalizations, neglected to weigh the evidence needed to reach informed conclusions, and explained to the Court that New Mexico wanted simply to apply priority. The result is the necessary length of this brief. Without an explication of the evidence, which the Master has not provided, the Court cannot "assess the correctness of [his] application of the principle of equitable apportionment to the facts of this case." *Id.* at 545.

SUMMARY OF ARGUMENT

Point I

In his initial report the Special Master stated that "[o]ne of the major difficulties confronting [him]. . . is the lack of reliable streamflow measurements." Report of December 31, 1981 at 2. After trial, crucial measurements became available as a result of the installation of a U.S.G.S. gauge. Because these measurements and other post trial data are of critical importance to three of the areas in which the Court instructed the Master to make specific findings, New Mexico moved to have the new evidence heard by the Master. *See Motion to Receive Evidence*, March 5, 1983. Despite his own recognition of the need for hard facts, the Master denied our motion.

The new U.S.G.S. measurements prove that the Master's use of average annual flow to assess water availability is wrong, as the Court has previously recognized with respect to other western streams. The data also show that the Vermejo River doesn't stop flowing at the Vermejo Conservancy District's headgate, but rather proceeds downstream to form part of the historical supply of the Canadian River users.

We also sought to introduce relevant data in a new technical report and the results of a hydrographic survey conducted to identify, locate, and determine the annual depletion from stockponds in the Vermejo drainage. At trial, Colorado persuaded the Master that "hundreds" of Vermejo stockponds deprive the Vermejo Conservancy District of "at least 2,000 acre-feet" of water on the basis of a single, factually unsupported statement of apprehension by a former District official that the District's water shortage was caused by the stockponds. The facts the Master excluded show unquestionably that there are few stockponds, that they constitute a beneficial use of long standing, and that the water they deplete is insignificant in regard to the water shortage experienced by the Vermejo Conservancy District.

The Master's exclusion of the tendered evidence was highly prejudicial and denied New Mexico the right to a hearing.

Point II

In its first opinion in this case the Court requested that the Master make specific findings of fact showing the existing uses of water on the Vermejo, balancing the possible lack of diligence with historical water shortage to determine whether any nonuse is excusable or should form the basis for forfeiting part of New Mexico's entitlement. To do so the Master had to weigh the historical supply against the demand.

The Master first cut New Mexico's demand for Vermejo water by eliminating the Canadian River uses on the theory that the Vermejo River comes to a dead end at the Vermejo Conservancy

District's diversion dam. The effect of the Master's conclusion, which flies in the face of U.S.G.S. gauged flows, is to ignore a part of the Canadian users' water rights and thus to permanently injure the existing New Mexico economy.

On the Vermejo itself the Master purports to weigh supply and demand and concludes that there has been plenty of water historically. It is apparent, however, that the Master didn't comprehend the demand. As a result, he did not actually weigh supply and demand to ascertain whether there have been historical shortages, but instead surmised that the acreage not irrigated in the 1970s was not irrigated because of lack of diligence.

The State of New Mexico, the Bureau of Reclamation, the United States Congress, and the Vermejo water users disagree with the Master. For the period 1950-1979 the facts show an aggregate supply of 297,720 acre-feet in the river and an aggregate demand of 510,000 acre-feet, resulting in a shortage of 212,280 acre-feet, which the Master inexplicably views as a plus. In the 1970s, which was the period in which the Master found that certain water users were not diligent because of nonuse, the demand was not met in any year, and the streamflow records show profound shortages. Blaming an act of God on the New Mexico users, the Master recommends forfeiting nearly half of their water rights and giving their water to C. F. & I.

Point III

The Court also asked the Master to assess the available supply by accounting for variations in streamflow, the possibility of making more water available by conservation or storage, and the possibility of freeing Vermejo water through the use of alternate sources of supply. Instead of making specific findings, the Master adopted a method of analysis which the Court has recognized cannot work, and he weighed the supply and demand again without appreciating the demand. He recommends that a Kafkaesque standard of efficiency and conservation be applied to

New Mexico, concluding without basis in the record that New Mexico might do this and might do that, not specifying a single conservation measure and not discussing the feasibility of any particular measure. He concludes by asserting that the demand for water on the Vermejo can be relieved with some of the water already being used.

Point IV

The Court specifically isolated the possibility of water conservation which might eliminate waste and inefficiency. In response the Master makes no specific findings, saddles New Mexico with a Utopian standard of efficiency and conservation, and concludes that no standard at all need apply to Colorado despite the Court's instructions.

Instead of analyzing specific conservation measures to determine whether they are economically and practicably feasible, the Master concludes that he need not be specific and further that he need not temper his generalities with any measure of feasibility. As a result, he surmises the possibility of conservation measures in general, with no support from the record. Pursuing a double standard, the Master concludes that Colorado shouldn't suffer the Vermejo Conservancy District's hopeless inefficiency, notwithstanding that the record shows that the District falls in the middle range of reclamation project efficiencies. In other words, regional practice in the Master's mind is no measure of economic or physical practicability.

With regard to the one specific conservation measure that the Master does discuss, which was undertaken by New Mexicans a decade before this suit was filed and was completed in November, 1982, the Master appears to recognize that the New Mexicans deserve to reap the benefits of their labor, but recommends giving the water conserved to C. F. & I. In his discussion of the historical supply and demand, the Master fails to recognize that the water conserved by the new pipeline is not

sufficient to offset the historical shortages, much less make water available for a new use in Colorado without forcing permanent, substantial injury in New Mexico. In effect, the Master proposes that the Court guarantee shortages in the future to the farmers in the Vermejo Conservancy District.

The Master also finds that "administration" in New Mexico could, in some unexplained way, conserve enough water to satisfy everyone. He fails to credit the extensive administration that in fact exists in New Mexico and suggests that priority administration is the key to conservation. He doesn't recognize that priorities are administered only to relieve the shortage he maintains does not exist. He fails to understand that strict priority administration in New Mexico during times of short supply would conserve no water for use by C. F. & I. in Colorado. In the Master's mind, priority of appropriation between appropriation states is not only not the guiding principle, but no principle at all.

Point V

In its first opinion in this case the Court extended the principle of balancing benefit to one state against harm to another to the circumstance of a proposed future use on a fully appropriated interstate stream. In doing so the Court recognized that the equities supporting the existing economy would usually be compelling, *i.e.*, would preclude the development of a new use to the detriment of existing uses. The Court also recognized the danger inherent in attempting to balance existing uses with undefined, speculative uses.

The record demonstrates the Court's concern. The Master could not make specific findings of the precise nature of the proposed use in Colorado because the use has not been contemplated with any precision. As a result, the Master

idealized the proposed use. On the other hand, the Master was quick to criticize the existing uses. Proceeding with this double standard, the Master balanced the ideal with the mundane and undermined the principle that the existing equities would usually be compelling.

The kind of balancing recommended by the Master has never been undertaken by the Court before. The Court has never weighed speculative economic value against the equities supporting an existing economy. Nor has the Court ever compared idealized future benefit with existing "inefficiency" in order to determine whether to sacrifice one use for another.

Point VI

The Master's analysis of injury begins with a foregone guarantee of injury, *i.e.*, he blames the drought of the 1970s on the New Mexico water users and punishes them by reducing their water right acreage by 3,839 acres. While the law is clear that property rights in water are not lost or forfeited for reasons beyond the control of the water users, the Master nevertheless deprives them of their rights and begins his discussion of injury with this deprivation behind him.

In an attempt to justify his action, the Master explains that the Vermejo Conservancy District, the user that will suffer permanent, profound injury, has a system of reservoirs and can carry over water to meet the additional shortage caused by the proposed Colorado diversion. His own figures, however, prove that there has not been sufficient supply to meet the demand since 1965. Consequently, there was no water to carry over either to or in the 1970s, the period the Master uses to reduce the New Mexico entitlement.

The Master rationalizes his recommendation on the ground that it really doesn't matter that the Vermejo Conservancy District and thus the United States will be injured. The United States, according to the Master, can afford the loss, and the guarantee that the Vermejo Conservancy District would not be productive enough to repay its debt to the United States should not be of any concern to the Court.

The Master is also of the view that the Vermejo Conservancy District should be sacrificed to C. F. & I. because it has not been profitable in recent years. While the District's homes, farms, farm machinery and implements, and related capital improvements are not recognized in the Master's accounting, he recommends that the District should be allowed to die because the water supply anticipated by the Bureau of Reclamation when it rehabilitated the Vermejo Project has not materialized. Profitability, however, has never been a measure of the beneficial use of water in any state in the West. If it were, the Court could order that most agricultural uses give way to more economically productive industrial uses. The present drought on the Vermejo, which appears to have dissipated with the improved water supplies of the 1980s, should not make the Court intolerant of the Vermejo Conservancy District. The Court has never apportioned interstate water on the theory that one state can speculatively make a better use of the water. 103 S. Ct. at 551.

The record shows the historic shortages to demand without question, but the Master does not appear to appreciate the numbers. Economically, as well as hydrologically, the injury to New Mexico would be profound. With a guaranteed reduction of 3,839 acres, New Mexico would be injured severely, and the economic ramifications would spread through Colfax County, the State of New Mexico, and into southern Colorado. Beyond the guaranteed loss, there would be additional loss to all New

Mexico users in low flow years and to the Canadian River users of Vermejo waters in high flow years. The economic quantification of these losses would depend on nature, but would be substantial. Utilizing Colorado's technique of assessing the benefits that would derive from the speculative use of Vermejo water in Colorado, an award of 4,000 acre-feet to Colorado would cause New Mexico to lose 1,875 jobs or 31% of the jobs and 40% of the total income of Colfax County. The loss in annual tax revenues to the State would be \$2-3,000,000. The loss to Colfax County and the State in terms of personal investment and social stability would be devastating.

Point VII

The Master bases his recommendation that Colorado be awarded 4,000 acre-feet of water on factors which would augment the water supply of the Vermejo river; gratuitously, the Master also recommends awarding C. F. & I. the first priority on the river.

It is one thing to make an equitable apportionment to a new use on a fully appropriated river on the basis of augmentation. It is quite another thing to restructure priorities interstate without offering a reason to do so.

ARGUMENT

POINT I

NEW MEXICO WAS DENIED THE RIGHT TO A HEARING ON ESSENTIAL EVIDENCE.

In remanding this case to the Special Master to make specific factual findings relevant to the question of an apportionment of the Vermejo River, the Court indicated that additional hearings might have been held where necessary to provide the findings that the Court requires. 103 S.Ct. at 549, n. 14. This comports

with the liberal, comprehensive fact finding process that the Court encourages in actions within its original jurisdiction. *New York v. New Jersey*, 249 U.S. 202 (1919); *United States v. Wyoming*, 331 U.S. 440 (1947). In *United States v. Texas*, 339 U.S. 707 (1949), the Court held that "[t]he Court in original actions, passing as it does on controversies between sovereigns which involve issues of high public importance, has always been liberal in allowing full development of the facts." 339 U.S. at 715.

New Mexico's Motion to Receive Evidence of March 5, 1983, set forth three areas in which New Mexico sought to present evidence. They included the extent of the contribution made from the Vermejo River into the Canadian River, depletions of Vermejo water by stockponds, and the completion of conservation measures instituted by the Vermejo Conservancy District. These areas of evidence relate to matters on which the Court expressed interest in its December 13, 1982 opinion. See, e.g. 103 S.Ct. at 550, n. 2. Consideration of this evidence was essential to an objective and accurate fact finding process. By excluding the tendered evidence the Special Master effectively denied representation to New Mexico's interests on the Canadian River and prepared a report warped by inaccuracies.

In his first report, the Special Master found that the Vermejo was virtually "a closed system." Report of December 31, 1981 at 2. The Master's basis for this conclusion was not factual. He stated that "no calls have ever been made for the water by the downstream users." *Id.* at 4. In December of 1980, the United States Geological Survey, in cooperation with the State of New Mexico, installed a streamflow gauge on the Vermejo Conservancy District's Canal below the Dawson gauge. This enabled measurement of actual diversions by the Vermejo

Conservancy District and contributions to the Canadian River. It was therefore possible to obtain specific measurements of flows from the Vermejo River into the Canadian River for the first time.

The data from the gauges show that a total of 12,000 acre-feet of Vermejo River water was contributed to the supply of users on the Canadian River in 1981 and 1982 alone. *See* Amended Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law, at 6-9, 11. Receipt of this evidence would have required the Master to acknowledge the Vermejo contribution to New Mexico's rights on the Canadian River. The Special Master's exclusion of this evidence is all the more perplexing because he began his first report by noting that "[o]ne of the major difficulties confronting the Special Master in this case is the lack of reliable streamflow measurements." Report of December 31, 1981 at 2.

With regard to the stockpond evidence, the Special Master's first report condemned New Mexico's uses as wasteful due to the presence of "unadministered" and "unlimited" stockponds which account for "a substantial depletion of the Vermejo's flow." *Id.* at 7. New Mexico has contended that this finding was based on a single, unsubstantiated hearsay statement contained in certain Colorado exhibits. Tr. 32. After the Court remanded the case, New Mexico promptly undertook to quantify the depletions from stockponds for the Special Master. New Mexico's motion to receive this evidence was denied and the Special Master proceeded to repeat his earlier ruling, citing New Mexico's "unregulated stockponds, fishponds and water detention structures" as a cause of waste on the river. Report of May 31, 1983 at 18. The Special Master referenced two Colorado exhibits in support of his conclusion. It had been Colorado's position in the briefs on remand that "the

stockponds, fishponds and water detention structures on the Vermejo River deplete the River of a substantial amount of water." Brief of the State of Colorado Pursuant to Special Master's Order of December 30, 1982 at 38. Colorado contended that "[t]hese structures capture at least 2,000 acre-feet annually." *Id.* at 29, n. 13. Colorado stated that the number of stockponds was "something more than 200." *Id.*

The actual figures tell a very different story. In 1982, the State of New Mexico published Technical Report No. 44 in conjunction with the U.S. Geological Survey. The report included water depletions by county from stockpond evaporation. N.M. Ex. No. F-53, Table 4. Based upon new data in the report, it was possible to estimate the depletion to the Vermejo River above the Vermejo Conservancy District's diversions due to stockponds. See New Mexico's Brief on Remand, at 52-53. Using these data, we estimated an annual depletion of 170 acre-feet. We then undertook an actual hydrographic survey of all of the stockponds in the Vermejo River system above the Vermejo Conservancy District's diversion points to verify this estimate. The survey was conducted by registered surveyors under the direction of Eluid Martinez, the Chief of the Hydrographic Survey Section of the New Mexico State Engineer Office. All of the stockponds were identified and located in the survey. See Amended Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law, at 2-4.

A representative sample consisting of 31% was surveyed by planetable mapping to determine the maximum water surface and depth of the ponds. Volume was also determined. The following facts were established:

- (i) there is a total of 80 stockponds in the entire Vermejo River drainage in New Mexico above the Vermejo Conservancy District's diversions;

(ii) there are no unadjudicated "fishponds" or unauthorized flood control structures in the Vermejo River drainage in New Mexico;

(iii) the aggregate capacity of all stockponds in service at maximum water surface level is calculated to be 212 acre-feet; and

(iv) while the actual depletion is less, the maximum annual depletion from all of the stockponds ranges from 182 to 192 acre-feet, which includes 10 to 20 acre-feet consumed annually by livestock and wildlife. *Id.*

This evidence, had it been considered, would not have allowed the Master to make inaccurate findings of water shortages caused by waste in "unregulated stockponds, fishponds and water detention structures." Report of May 31, 1983 at 18.

While the Master rejected the only evidence regarding the completion of the District's closed stockwater system designed to save 2,000 acre-feet annually, he commends its completion. Without providing either legal or equitable justification, the Master recommends that water that the District has indebted itself to salvage to mitigate shortages be awarded to Colorado. While rejecting our tendered evidence, it is apparent that the Master selectively used certain facts contained therein. New Mexico should have been afforded the opportunity to have presented all of the relevant evidence which became available after trial.

POINT II**THE SPECIAL MASTER FAILED TO MAKE FINDINGS WHICH WOULD SHOW EITHER THE NUMBER OF NEW MEXICO'S USERS DEPENDENT ON THE VERMEJO RIVER OR THE EXTENT TO WHICH THESE USERS HAD DILIGENTLY DEVELOPED THEIR RIGHTS.**

The Court required the Special Master to make specific findings of fact showing both "the existing uses of water from the Vermejo River, and the extent to which present levels of use reflect current or historical water shortages or the failure of existing users to develop their uses diligently." 103 S. Ct. at 548-49. To respond to the Court on this point, the Special Master had to identify the users with rights in Vermejo water and determine the impact of water shortage or lack of diligence in the development of the rights. He failed to do either. Consequently, his conclusions are erroneous.

The Special Master erred in describing the existing uses of water from the Vermejo River in New Mexico by wrongly excluding New Mexico's uses on the Canadian River from consideration. This exclusion was made despite uncontroverted evidence from trial that certain users on the Canadian River had rights in Vermejo water and despite his awareness of more recent data showing flows from the Vermejo into the Canadian River. *See* New Mexico's Motion to Receive Evidence of March 5, 1983, and Amended Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law, at 6-9, 11. Secondly, the Master erred by describing the restricted level of use in the drought period of the late 1970s as the extent to which New Mexico's rights on the mainstem Vermejo have been diligently developed. In neither instance has the Special Master complied with the mandate of the Court to submit "specific factual findings" which show New Mexico's uses from the Vermejo or which evaluate the extent to which the uses on the mainstem Vermejo have been influenced by drought.

At the beginning of the report the Master states that there are "nine existing users of the Vermejo River which were mentioned during the course of this case." Report of May 31, 1983 at 2. In fact, there are fourteen. Five of these divert from the Canadian River but have rights in Vermejo water that is contributed to the Canadian below the confluence of the two rivers. They were mentioned throughout trial. Tr. 1044, 1055, 1131-32, N.M. Ex. Nos. G-4, G-5, G-16, G-17, G-18. Included are irrigation rights for the Arch Hurley Conservancy District consisting of 42,213 acres, together with 300,000 acre-feet of storage rights in Conchas Reservoir, the New Mexico Interstate Stream Commission's 200,000 acre-feet of conservation storage rights at Ute Reservoir, and irrigation rights for the Bell Ranch (1,002 acres), Bruhn and Sons Ranch (157 acres), and the Sabinoso Community Ditch Association (163 acres). These users have experienced chronic shortages. Tr. 1368-78, 2223-25. As the testimony showed, they rely upon water contributed by the Vermejo River. Tr. 1044, 1131-32, 2218-2336.

New Mexico has long contended that Colorado's analysis excluded the Canadian rights because Colorado attempted to minimize New Mexico's requirements for Vermejo water. The reasons given by Colorado for ignoring the Canadian rights at trial demonstrate strategy decisions totally unsupported by any factual examination or analysis.¹ We took exception to this exclusion in the Master's first report, in which the Master had purported to make the factual finding that the Vermejo was a "closed system" on the basis of an erroneous legal conclusion.²

¹ At trial Colorado's chief hydrological witness, Mr. Helton, testified that no consideration had been given to rights on the Canadian River because they were not "deemed to be relevant." Tr. 303. Three reasons were given for this: (i) the Vermejo Conservancy District has never relinquished water to downstream users; (ii) there is no requirement to do so; (iii) no calls have been made on Vermejo users to pass water to users on the Canadian. Tr. 280-83, 286-88. None of these reasons is based upon hydrological analysis.

² In his first report the Master found "no competent evidence of any dependency on Vermejo water by users downstream from the Vermejo Conservancy District" because no downstream users had made calls on

Report of December 31, 1981 at 2. There is a revealing contradiction in Colorado's position. When C. F. & I. Steel Corporation first applied for a water right in the Water Court for Water Division No. 2 in Case No. W-3961, the application was denied because the water court concluded that it lacked jurisdiction because the Vermejo tributaries were not tributary to the Arkansas River. Tr. 731. C. F. & I. moved to reconsider, arguing that the contrary was true. Mr. Adkins, the C. F. & I. official with responsibility for the application, testified, "I was pleased to provide [the Water Court]. . . with a geography lesson in which I showed him this is a tributary of the Canadian which is a tributary of the Arkansas River. . . ." Tr. 731-32.

It is in this context that the Court must view the Master's exclusion of evidence obtained since trial by the United States Geological Survey. As indicated in our Narrative Tender of Evidence submitted to the Special Master on May 13, 1983, a gauge was installed by the United States Geological Survey on the Vermejo Canal of the Vermejo Conservancy District in late 1980. The purpose of this gauge was to measure flow into the Vermejo Conservancy District reservoirs and to determine the amount of Vermejo water contributed to the Canadian River. In February of 1983, published records became available for the water year 1981. In April of this year, provisional records became available for the water year 1982. With minor alterations, the 1982 data were verified by the U.S.G.S. on May 17, 1983. These records provide a direct basis for

Vermejo users to pass water down to them. Report of December 31, 1981 at 4. However, as the Court recognized in its opinion of December 13, 1982, both Colorado and New Mexico are governed by the law of prior appropriation. 103 S. Ct. at 543, n. 4. "A distinctive feature of the prior appropriation doctrine," the Court noted, "is the *rule of priority*, under which the relative rights of water users are ranked in the order of their seniority." 103 S. Ct. at 543, n. 4. While senior rights can place calls on junior users to pass water to them in times of short supply, junior users cannot call upon seniors. The users on the Canadian River are all junior to those on the Vermejo. Tr. 1044, 1046.

calculating the amount of water passing the Vermejo Conservancy District's headgates into the Canadian River. New Mexico asked the Special Master for the opportunity to present this evidence. *See Motion to Receive Evidence of March 5, 1983.* Colorado strenuously resisted allowing New Mexico the opportunity either to present the evidence at hearing or to tender the evidence to the record for purposes of review by this Court. The motion was denied.

Calculations of contributions to the Canadian were made by subtracting the flow diverted by the District from the flow at the Dawson gauge during flood events. The amount of water in the Vermejo River at the Dawson gauge from June through September of 1981, and from May through September of 1982, was 26,710 acre-feet. Of this amount, 12,490 acre-feet were actually diverted by the District. During that time there was a depletion of 2,220 acre-feet between the Dawson gauge and the Vermejo Canal gauge caused by Phelps Dodge and the five private users. This depletion occurred during the months of June and July of 1981, and May, June, and July of 1982, when there was no spill at the District's diversion headgates, and represents the difference between the recorded flow at the Dawson gauge and the recorded flow at the Vermejo Canal gauge. The data from the gauges show that in August and September of 1981, approximately 5,500 acre-feet of water spilled past the Vermejo Conservancy District's headgate in the form of peak flood flows. In August and September of 1982, approximately 6,500 acre-feet were spilled. A total of 12,000 acre-feet of Vermejo River water was therefore contributed to the supply of users on the Canadian River in those two years alone. *See Amended Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law, at 6-9, 11.*

Two conclusions can be drawn from these data. First, there is verifiable evidence of a substantial water contribution to the Canadian River from the Vermejo. This water directly

contributes to New Mexico's rights on the Canadian. Tr. 1044, 1131-32, 1670-1677. It was prejudicial error for the Master to exclude this evidence and to dismiss the Canadian users with rights in Vermejo water from the report. Secondly, the data from the two gauges show the difference between what Colorado has represented as available water supply and what is actually divertible. This will be discussed at greater length in Point III. The difference is apparent in N.M. Ex. Nos. F-56 and F-57 Revised, attached to New Mexico's Amended Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law. These hydrographs clearly show the water actually diverted by the Vermejo Conservancy District in contrast to flows of the Vermejo River.

In responding to the Court's inquiry concerning the existing uses of Vermejo River water, New Mexico's Brief on Remand focused on the precise issue framed by the Court — whether current levels of use in New Mexico represent either historical water shortages or the failure of New Mexico water users to develop their uses diligently. 103 S. Ct. at 548-49. It was clear that by "existing uses" the Court did not mean simply the amount of currently irrigated acreage.³ 103 S. Ct. at 549. Instead, the Court was asking that each right be evaluated to determine whether any period of restricted use was caused by shortage or was attributable to lack of diligence. The Court was

³ If the Court had meant by "existing uses" the number of acres irrigated at present, New Mexico's burden would depend upon when the plaintiff elected to file suit. Had the case been filed in 1977, the plaintiff would have found 665 acres irrigated in the Vermejo Conservancy District. Had suit been filed in 1982, the plaintiff would have found 6,882 acres irrigated. U.S. Bureau of Reclamation Statistical Summary 1980-1982. On the one hand, New Mexico would have had to justify nonuse on 6,714 acres, and on the other the burden would have gone to only 497 acres. Consequently, we assume that the Court means by existing uses the amount of acreage which survives a balancing between historical water shortage and lack of diligence.

confirming that restricted use in times of shortage cannot be attributed to lack of diligence.⁴

At trial New Mexico presented evidence of the development of the Vermejo rights and related that evidence to hydrological evidence. Colorado presented no such evidence. Colorado's evidentiary analysis began in 1973. As to the extent of uses prior to 1973, Colorado's chief hydrologist admitted that he had "no information at all." Tr. 305.

⁴Under the law of prior appropriation in both Colorado and New Mexico, nonuse caused by circumstances beyond the control of the water right owner is excused. In *Chaves v. Gutierrez*, 54 N.M. 76, 213 P.2d 597 (1950), the New Mexico Supreme Court held:

It is true there were long intervals between 1913 and 1932, the period in which nonuse sufficient to constitute forfeiture is claimed to have occurred, when no irrigation of the lands in tract No. 8 actually took place. Nevertheless, the evidence is abundant that throughout such periods of nonuse, droughts producing a shortage of water, the progressively increasing depth and width of Chavez Canyon, which had its course across a portion of tract No. 8, all combined to render irrigation impractical or impossible. (54 N.M. at 82, 213 P.2d at 600).

The Court held that under those climatological conditions a forfeiture would not take place. *Id.* at 82, 213 P.2d at 600. This principle was affirmed in *State of New Mexico ex rel. Reynolds v. South Springs Co.*, 80 N.M. 144, 452 P.2d 478 (1969). New Mexico statutes recognize the unfairness in loss of a water right through nonuse where conditions beyond the control of the owner prevent use. See §72-12-8 (N.M.S.A. 1978).

The same is true of the other western jurisdictions. See *Rocky Ford Irrig. Co. v. Kents Lake Reservoir Co.*, 104 Utah 202, 135 P.2d 108 (1943); *Federal Land Bank v. Morris*, 112 Mont. 445, 116 P.2d 1007 (1941); *Scherck v. Nichols*, 55 Wyo. 4, 95 P.2d 74 (1939); *Gould v. Maricopa Canal Co.*, 8 Ariz. 429, 76 Pac. 598 (1904); *Yentzer v. Hemenway*, 440 P.2d 7 (Wyo. 1968). In each of these cases, a period of nonuse was excused for reasons beyond the control of the water right owner.

C. F. & I. Steel Corporation is familiar with this principle. In the case of *In re C. F. & I. Steel Corporation in Las Animas County*, 183 Colo. 135, 515 P.2d 456 (1973), C. F. & I. sought to excuse nonuse of 54 years.

The Master relied entirely on Colorado's fragmentary analysis. He provided no findings which would show the development of New Mexico's rights from the 1860s and the restriction of uses in the 1970s by successive years of below average flow. The Master refused to consider or evaluate the evidence on this point, referring frequently to New Mexico's "alleged drought." E.g., Report of May 31, 1983 at 11. The Master did not evaluate the actual water supply against the demand for that supply by the water users. As a consequence, his discussion of the rights on the Vermejo River encompasses no more than the last years of the 1970s, despite the history of uses from this river since 1867 and the extensive hydrological evidence introduced by New Mexico. In short, the Master did not attempt to make the findings requested by the Court.

New Mexico presented historical evidence of the development of rights on the Vermejo drawn from three sources: the hydrographic survey of 1927-28, the adjudication proceedings and decree in *Phelps Dodge Corp. v. W. S. Land and Cattle Co.*, No. 7201 (D. C. Cty. Colfax 1941), and testimony of the water users. The latter testimony extends from the 1920s to the present.

The hydrographic survey showed the extent of historically developed irrigation from the Vermejo River as of 1927-28 in a series of maps which identify the location and amount of irrigated acres, the cropping pattern, points of diversion, location of ditches, and other relevant factors. N.M. Ex. No. D-3. The hydrographic survey showed a total of 24,860.77 acres that had been developed for irrigation of which 17,181.13 acres were classified as cultivated and 7,679.64 acres were classified fallow. The irrigation development occurred at a time of reliable supply. This supply is confirmed by data on the water supply from adjacent river basins. See Tr. 1195, N.M. Ex. Nos. A-1, A-3, A-60 through A-79.

The acreage decreed in *Phelps Dodge Corp. v. W. S. Land and Cattle Co.*, No. 7201 (D. C. Cty. Colfax 1941) reflects the water supply of the later 1930s and early 1940s. A total of 17,386.75 irrigated acres was decreed.⁵ The difference between the total developed acreage found in the hydrographic survey, and the total adjudicated acreage (7,474.02 acres) is land that had been developed but was not recognized in the decree because of the Court's judgment that it had not been diligently developed.

New Mexico's hydrological evidence shows that in the 1950-1979 period, the Vermejo River produced only 60% of the water produced in the 25 year period prior to 1950. N.M. Ex. No. A-1, A-3, A-60 through A-79. In the 1970s, drought is revealed by

⁵ The decreed acreage was as follows:

<u>Water User</u>	<u>Acres Irrigated</u>
Southwest Land Co. (Present Owner: Vermejo Park Corp.)	801.00 (Tributaries) 870.20 (Mainstem)
Phelps Dodge Corp. Holland Duell (Present Owner: Eual Messick)	501.19 163.40
Josib Subat (Present Owner: Joe Pompeo)	101.50
John Caraglio (Present Owner: Ray Porter)	16.49
W. S. Land & Cattle Co. (Present Owner: Vermejo Park Corp.)	46.73
Guido Federici (Present Owner: Mrs. Sam LaRoe)	82.99
Tom Farmer (Present Owner: Mrs. Sam LaRoe)	181.70
Maxwell Irrigation Co. (Vermejo Conservancy District)	14,621.55
TOTAL	<u><u>17,386.75</u></u>

long periods of consecutive dry years. N.M. Ex. Nos. F-10, F-12, F-14. The two below average years of 1971-72 were followed by only one year of near average flow, 1973, and by five years of below average flow. Tr. 1179. This trend is particularly apparent on New Mexico Exhibit No. F-14. It was essential for the Special Master to consider this evidence to accurately provide the findings requested by the Court.

The findings that the Special Master did make for the individual users reflect his refusal to weigh the evidence in an analytical and objective manner. Prior to the record breaking flood of 1965 and the drought of the 1970s, the unrefuted evidence from the water users shows the extent of New Mexico's irrigation on the Vermejo. Subsequent to the rehabilitation of the Vermejo project in 1954, the irrigation consisted of 9,111.8 acres of land.⁶

For Vermejo Park, the Special Master concluded that "the number of acres actually being irrigated is between 200 and 250." Report of May 31, 1983 at 3. He discussed three elements of evidence in this regard: testimony of the New Mexico State Engineer that there is sufficient water for Vermejo Park to irrigate more than 250 acres, the Dawson gauge, and the fact that Vermejo Park has "other sources of irrigated lands." *Id.* In the first two instances, the Master has misapprehended the evidence.

⁶The evidence shows the following acreage to have been in irrigation or irrigation rotation in this period:

Vermejo Park Corporation	690.0
Phelps Dodge	450.0
Odom	264.7
Duell	163.4
Pompeo	101.5
R. Porter	16.5
Vermejo Park	46.7
Vermejo Conservancy District	<u>7,379.0</u>
TOTAL	9,111.8 acres

Irrigation rotation refers to lands temporarily out of cultivation for soil building purposes or placement of lands in the Soil Bank.

The State Engineer did not testify that there was generally enough water for Vermejo Park to irrigate more than 250 acres. His testimony was carefully qualified to reflect that Vermejo Park could have irrigated more acreage only in periods of adequate supply. Tr. 2427. He testified that the rights on the Vermejo have suffered severe and chronic shortage. Tr. 2430.

The Master's reliance upon "monthly and annual discharge of the Vermejo River near Dawson, New Mexico" cannot support the availability of water to the Vermejo Park Corporation. Report of May 31, 1983 at 3. The gauge is located several miles downstream from Vermejo Park's diversion works and measures intervening tributary inflows.

The Master writes that Vermejo Park Corporation has other sources of irrigated lands on "a completely different water system" and that the availability of this source is another factor in Vermejo Park's failure to fully develop the Vermejo water. *Id.* at 3-4. It is true that Vermejo Park Corporation has irrigated lands which receive water from the Cimarron River system, but that is completely irrelevant to this action. The Cimarron River system cannot supply water to the irrigated lands on the Vermejo River. Vermejo Park Corporation's lands irrigated from the Cimarron and the Vermejo River systems are part of the Corporation's total available ranch resources. Yet the Master states that Vermejo Park Corporation is primarily a hunting and fishing resort and implies that for this reason the Corporation has not diligently put to use all of the water available to it from the upper Vermejo River. *Id.* at 3. Despite this conclusion, the Master found that Vermejo Park had diligently developed its entire decreed acreage at its property on the lower Vermejo. *Id.* at 6. If the Master's conclusion is true, why would Vermejo Park exert an effort to use its Cimarron River and lower Vermejo water supplies and not its water rights on the upper Vermejo?

The Master disregarded the testimony of those most knowledgeable about Vermejo Park showing the diligent development of this irrigation prior to the early 1970s and the decreased water supply thereafter. Mr. Charlesworth is the chief officer of Vermejo Park. Tr. 2074. At the beginning of his employment in 1975 he undertook a comprehensive study of the irrigation potential at Vermejo Park. This study engaged an agronomist and geologist who examined all the ditches and fields on the mainstem Vermejo and the tributaries. Tr. 2061. Mr. Charlesworth's testimony on this question is significant because Colorado, and subsequently the Special Master, relied upon it for determining the "historically irrigated" or "diligently developed" acreage at Vermejo Park. However, they ignored the crux of his testimony:

It's quite obvious on Vermejo Park that sometime during the 60's there was a tremendous amount of more acreage irrigated than there is today due to the lack of water.

Q. How do you know that?

A. Well, when you drive down the Vermejo River and every field you see hay stacks of larger than this room you know it's obvious at one point in time there was a lot of hay stored in these areas. They wouldn't build a hay stack just for the exercise of it.

Q. Did the testimony you gave in your deposition purport to make a statement as to, "historically irrigated acres" or to discuss the amount of acres irrigated prior to the time when you came on in 1974?

A. No, sir. My deposition was referring only to the period of time since my employment with Vermejo Park Corporation. Tr. 2074.

The testimony best describing Vermejo Park's irrigation practices prior to Mr. Charlesworth's tenure is that of Mr. Armijo. Mr. Armijo is the foreman. Tr. 2121. His responsibilities include all of the activities necessary for successful irrigation including maintenance of the ditches, preparation of the fields, planting and harvesting. Tr. 2121. He has worked in agricultural positions all of his life. Tr. 2124. From his experience he is familiar with the flows of the Vermejo River. Tr. 2124. Mr. Armijo has worked on the Vermejo Park property for twenty years. Tr. 2122.

When he began his employment at Vermejo Park in the early 1960s he remembers approximately 700 acres under irrigation from the mainstem of the Vermejo. Tr. 2124. He identified the irrigated acreage under the various ditches:

(a) Shy Ditch	40 acres	
(b) Young Ditch	400 acres	
(c) Baca-Vigil Ditch	50 acres	
(d) Reed Ditch	40 acres	
(e) Montoya Ditch	60 acres	
(f) Torres Ditch	100 acres	
TOTAL	690 acres	Tr. 2124-26.

Mr. Armijo testified that in the early 1970s he observed a decrease in the level of flow in the Vermejo River. Tr. 2129-30. He testified that this occurred at a time of decreasing snowfall and precipitation. Tr. 2129. Mr. Armijo's testimony was unchallenged.

Both Mr. Charlesworth and Mr. Armijo testified that the deposition testimony relied upon by Colorado to fix Vermejo

Park's irrigated acreage at 250 acres historically could apply only to the period of drought in the 1970s. Tr. 2075, 2128, Mr. Charlesworth testified:

Q. I would like you to characterize the statement that appears in Colorado's Exhibit No. 6 from the standpoint of your deposition testimony.

Would you say that any interpretation or conclusion of your testimony on the effect that 200 acres was the historically irrigated amount of acreage on the Vermejo Park Corporation was a correct conclusion or an incorrect conclusion?

A. That is an incorrect conclusion. Tr. 2075.

In his testimony Mr. Charlesworth recounted his efforts to irrigate additional acreage at Vermejo Park. Mr. Charlesworth testified that Vermejo Park would irrigate the entire 870 acres of decreed rights on the mainstem Vermejo if water were available. Tr. 2080. The water supply is simply not present. Tr. 2078, 2116. This has been proven by experience. Although faced with shortage, Vermejo Park has attempted to irrigate more acreage each year. Tr. 2076, 2077-78, 2080, 2084, 2099, 2116-17.

Q. Why aren't you irrigating more acres?

A. [by Mr. Charlesworth] Well, as I have repeatedly stated, each year in a majority of the years since Pennzoil has owned Vermejo Park, since Vermejo Park bought the property, we have tried to develop additional acreage to grow the crops that are necessary for us.

We can get one watering on them, but the predictability of getting another watering on them or two more waterings on them is nearly impossible. It has proven impossible. Tr. 2077-78.

Although the Special Master stated that Vermejo Park's water use was "at best careless" and "not efficiently developed," he provided no findings to support that conclusion. The evidence shows that Vermejo Park undertakes a careful grooming and fertilization program for its fields. Tr. 2079. In addition, the Special Master has incorrectly stated that the water used by Vermejo Park comes only from one source, Ditch 13. This is not correct. Mr. Charlesworth testified that Vermejo Park utilizes a portable pump to divert water from the Vermejo River into other ditches serving the Corporation's irrigated acreage. Tr. 2117-18.

The Master's treatment of Kaiser Steel's rights is similarly misdirected. Early in the report he writes that "both Colorado and New Mexico are in agreement that one reason for the failure to fully develop the available water is the Kaiser mine at York Canyon." Report of May 31, 1983 at 4. He explains by stating that an average of 25% of Kaiser's necessary water is supplied from the York Canyon site, which he concludes is not directly on the Vermejo River and "should be unaffected by prior Vermejo River diversions." *Id.* at 4.

The Kaiser Steel Coal mine has two points of diversion from which it obtains its water supply. Diversion point A is an infiltration gallery, which is essentially a horizontal well buried in the alluvium of York Canyon. Tr. 1723. Diversion point B consists of pumps in the Vermejo River from which the water is pumped to the mine via a six inch pipeline. Tr. 1723. The confluence of York Canyon and the Vermejo River is below the location of diversion point B, so water that flows past diversion point A may not be diverted at diversion point B, contrary to the Master's discussion at page 26.

The Master states that Kaiser has lost its incentive to fully develop all of the available Vermejo River water. Report of

May 31, 1983 at 5. This statement is negated by Kaiser's installed pumping plant and pipeline to convey water from diversion point B on the Vermejo River to its York Canyon mine with a capacity of 530 gallons per minute. Tr. 1723, 1730. This installation will pump approximately 850 acre-feet per year which is more than adequate to pump the 630 acre-feet per year which is the limit of Kaiser's owned and leased rights to Vermejo River water. The testimony at the pages referenced by the Master shows that Kaiser has not diverted the full allotment of 630 acre-feet per year because of the ongoing development of the mine at York Canyon. The mine is not fully operational yet. Mr. Taylor specifically linked increased water usage to increased sales of coal. Tr. 1727. Rather than having "lost its incentive to fully develop all of the available Vermejo River water," Report of May 31, 1983 at 5, Kaiser requires this water for its expanding operations. Tr. 1724-1726.

Historically, *i.e.*, since the opening of the coal mine in 1966, an average of twenty-five percent (25%) of Kaiser's demand has been met from the York Canyon alluvium. However, during the first years of mine operation, up to 80% of the water supply was obtained from the New York Canyon alluvium. During the years immediately preceding the start of trial, this source supplied less than 10% of the total demand. N.M. Ex. No. D-6.

The reason for this decline in water yield is that there is generally insufficient recharge to provide a constant supply from the alluvium. The early depletion of this aquifer left little supply available for use in later years.

Mr. Taylor described this phenomenon as follows:

"Our experience is this country is very lenticular. That means there are no known aquifers of any great importance.

And so you pump out these areas very quickly and they have to be recharged rather quickly also by frequent rains or what have you, snowmelts. If they are not recharged, then there is no water available. Tr. 1735.

* * * *

It's important to keep in mind point A is a very intermittent supply. It can be pumped down very readily.

Q. I understand that. In some years you took 75 percent of your supply from the pumps?

A. But remember that was before we pumped down the limited aquifers in the area. Tr. 1744.

Kaiser has maintained its full water right under New Mexico law by securing extensions of time in which to apply the water to beneficial use. Tr. 1106. Such extensions of time are granted where the applicant can show that a diligent effort is being made to develop the water supply for the intended use. In the interim, water not used by Kaiser under its priority flows down the river to become a part of the supply currently available to the Vermejo Conservancy District, or, during low flow periods, to Phelps Dodge and the private users diverting from the district canal. The water not being used by Kaiser is *not unused* in New Mexico. The same is true for each of the appropriators from the Vermejo River. Water not currently being used by Vermejo Park Corporation flows downstream to the next user and this sequence may be repeated down to the Vermejo Conservancy District headgate. Within its capability to divert flows and the capability of its storage works, the Vermejo Conservancy District picks up all unused water from upstream appropriators. To the extent that the district cannot pick up the unused water, it flows on downstream into the Canadian and into Conchas Reservoir. Tr. 1331-32. Conchas Reservoir last spilled in 1965. Tr. 1376.

In 1963, the initial stage of Ute Reservoir was completed, providing a total reservoir capacity of about 110,000 acre-feet. In 1984, enlargement of Ute Reservoir will be completed, which will provide a conservation storage capacity of 200,000 acre-feet and a total storage capacity of 272,000 acre-feet.

With respect to acreage owned by the Phelps Dodge Corporation, the Master concluded that "up to 110 additional acres could have been irrigated without additional reclamation." Report of May 31, 1983 at 5. The source for this conclusion is given as the testimony of Mr. Jiggs Porter. However, Mr. Porter's complete testimony was that water was not available to irrigate the additional acreage:

Q. Is there any remaining land that was formerly irrigated to which water could physically be applied?

A. Yes, sir.

Q. How much in your estimation?

A. I think approximately a hundred ten acres, perhaps.

Q. Why is it this acreage is not being cultivated?

A. We just don't have adequate water for it. Tr. 2180.

Mr. Jiggs Porter was the principal witness for irrigation practices on the Phelps Dodge property. This land is currently leased to C S Cattle Co. Tr. 2141, 2163. Mr. Porter has been employed as the foreman for the C S Cattle Co. for 31 years. Tr. 2170. He has been familiar with the Phelps Dodge property at Dawson since 1935. Tr. 2172. He testified from personal knowledge and experience that Phelps Dodge irrigated between

450 and 500 acres until 1965. Tr. 2174-75. In that year, two events affected Phelps Dodge's irrigation capability — the flood of 1965 and the construction of a railroad over part of the property. Tr. 2175-76. The flood washed out some of the ditches and covered the land with debris. Tr. 2175. There was no practical means of applying water to land west of the river. Tr. 2175.

Mr. Porter testified that the flow of the Vermejo has decreased steadily in recent years. Tr. 2179. He testified that he is currently irrigating as many acres as can reasonably be expected to receive a supply of water. Tr. 2180.

Phelps Dodge's irrigation practices were confirmed by the president of C S Cattle, Mr. Leslie Davis. He testified that C S Cattle made an effort to relevel and reclaim fields that were washed away. Tr. 2164. He testified that, given the available water supply, C S was irrigating all that could be irrigated. Tr. 2164-65.

Phelps Dodge has substantial coal reserves on this property. Tr. 2154. The estimates range from one-half million tons to two million tons of salable coal per year. Tr. 2155. Approximately 600 employees would be required to mine it. Tr. 2155. Phelps Dodge has reserved the option to resume mining on the property and has undertaken an extensive program to evaluate feasibility. Tr. 2154-55. Water would be required for dust suppression, coal washing, and for domestic purposes. Tr. 2156. Estimates range from 220 to 900 acre-feet of water that would be required. Tr. 2157-58.

According to the Master, New Mexico would "reserve" 220-900 acre-feet of water which Phelps Dodge is not presently using. Report of May 31, 1983 at 6. He writes that New Mexico does not indicate there would be a problem should the extra water be needed. He says, "presumably it is presently available, unused."

Id. Contrary to the Master's presumption, all of the Vermejo River water supply is used by other New Mexico water users who would be deprived of that supply when Phelps Dodge requires it.

In this report the Master discusses the private water users diverting from the Vermejo Canal; Pompeo, Odom, Porter, Messick and Vermejo Park Corporation. *Id.* at 6-7. They were excluded from his first report. He finds that the two users having the largest acreage, Pompeo and Odom, have not been diligent and he allows them less than 50% of their decreed acreage while allowing two of the three other users the full amount of their decreed acreage. Then, inexplicably, he finds that Mr. Messick, the fifth user, is entitled to irrigate 88 acres of land. *Id.* at 7. This is factually impossible. Messick was left only 48 acres after the transfer to Kaiser.⁷ Tr. 1029.

The private users diverting from the Vermejo Canal testified to their water usage and to the effect of shortage on their farms. Mr. Pompeo has water rights appurtenant to 101.50 acres of land. He testified that there was insufficient water for him to currently irrigate more than 50 acres. Tr. 2201-02. He has unsuccessfully tried to irrigate more. Tr. 2203-04. Mr. Odom owns 264.69 acres of water rights. He testified that declining streamflow in the Vermejo River in the early 1970s caused him to reduce the amount of acres irrigated from the decreed 264 acres to 113 acres. Tr. 2211, 2213. He testified that if water were available, he would irrigate the full 264 acres today. Tr. 2214-15. Mr. Ray Porter irrigates approximately 16.5 acres. Vermejo Park irrigates 46.73 acres. Tr. 2110. Mr. Messick irrigates 48.4 acres. Tr. 1029. Thus, the total is 477.82 acres. All of the private users testified to their desire to continue farming and to leave their landholdings to their families. Tr. 2191-92, 2203-06, 2214-17.

⁷Correspondingly, Kaiser has been deprived of 80 acre-feet of water transferred from the original Messick right.

The Master finds that the Vermejo Conservancy District has not given top priority to development of its allotment of water from the Vermejo River because complete and diligent development does not appear essential, in part because of alternative sources and in part because of the inefficient and problematic operation of the District itself. Report of May 31, 1983 at 9. The Master makes this finding in the face of testimony by New Mexico witnesses that the Vermejo is the most dependable source of supply to the District and that the Vermejo provides 70% of the supply to the District with only 30% supplied from its other source, the Chico Rico. Tr. 1303. All of the District's reservoir storage capacity totalling approximately 22,600 acre-feet can be filled from the Vermejo. All of the 7,379 acres in the District can be served from the Vermejo source. However, only 7,400 acre-feet of the District's reservoir storage capacity can be filled from the Chico Rico and not all of the 7,379 acres can be reached with water from the Chico Rico. Tr. 1313. In addition, the Master does not understand the sources of supply available to the District. According to the Master, the Chico Rico provides about 35% of the District's water; and Willow, Crow, Curtis and Saltpeter Creeks may provide up to 10% of the water used by the District. Report of May 31, 1983 at 9. Saltpeter Creek is intercepted by the Vermejo Canal and its contribution is included in the 70% supply provided from the Vermejo source. Willow, Crow, and Curtis Creeks are intercepted by the Eagle Tail Canal, the District's canal from the Chico Rico, and their contribution is included in the estimated 30% supply provided from the Chico Rico source.

The Master incorrectly portrays the facts by stating that the Vermejo Conservancy District reservoirs primarily divert flows from the Chico Rico. *Id.* at 12. As shown by the above discussion, the converse is true.

The Vermejo Conservancy District has experienced severe shortages, especially since 1966. New Mexico Exhibit No. F-37 shows the extent of irrigated acreage in the District, together with the District's annual prorations. The total project acreage is 7,379 acres. A full water supply requires a ration of 1.5 acre-feet per acre. The following tabulation reflects historical prorations:

<u>Calendar Year</u>	<u>Annual Water Proration (Acre-Feet/Acre)</u>	<u>Irrigated Acreage</u>
1955	1.25	3763
1956	1.38	4941
1957 .....	.67	4276
1958	1.00	4602
1959	1.50	4693
1960 .....	.50	4592
1961	1.00	6436
1962	1.50	5869
1963 .....	.38	4344
1964 .....	.11	2349
1965	1.08	3218
1966 .....	.60	4114
1967 .....	.58	3902
1968 .....	.67	4720
1969 .....	.33	6294
1970 .....	.67	5559
1971 .....	.08	5094
1972 .....	.29	4912
1973 .....	.58	5083
1974 .....	.54	6262

<u>Calendar Year</u>	<u>Annual Water Proration (Acre-Feet/Acre)</u>	<u>Irrigated Acreage</u>
1975 .....	.25	5422
1976 .....	.05	2063
1977 .....	.00	665
1978 .....	.48	3016
1979 .....	.50	3398

See generally N.M. Ex. No. F-37.

The conclusion is obvious. From 1955 to 1965, which was the period during which the lands within the rehabilitated project were to have been redeveloped, the actual water supply fell short of a full supply of 1.50 acre-feet per acre each year but two. The supply dropped off radically in the 1970s.

With respect to the uses on the Canadian River, the water supply analysis contained in the Water Supply Study for the Tucumcari Project (N.M. Ex. No. C-3), shows that the water supply available to the Arch Hurley Conservancy District would have averaged 87 percent of the demand or an average annual shortage of 13 percent for the period studied. Tr. at 1368.

POINT III

THE MASTER'S DETERMINATION OF THE "AVAILABLE SUPPLY" OF WATER FROM THE VERMEJO IS ANALYTICALLY WORTHLESS TO THE COURT. HE USES A STANDARD EXPRESSLY REJECTED BY THE COURT, MISSES THE SIGNIFICANCE OF THE STREAM FLOW DATA, CONJURES UP CONSERVATION MEASURES NOT FOUND IN THE RECORD, AND CONCLUDES BY FINDING THAT SOME OF THE DEMAND FOR WATER ON THE VERMEJO CAN BE RELIEVED WITH SOME OF THE WATER ALREADY BEING USED.

The Special Master's treatment of the "available supply" shows that he doesn't understand the significance of the numbers he uses to conclude that "there is an adequate water supply to satisfy the needs of all users." Report of May 31, 1983 at 21. The Master approaches the matter in two ways. First, effectively disregarding the guidelines set by the Court in previous equitable apportionment actions, the Master adopts average annual flow as his standard of determining availability and concludes that "even an average of 10,900 acre feet at Dawson gauge would seem to provide a fair amount of available water, and more than enough to supply the current uses below the gauge." *Id.* at 11. He reaches this supposition notwithstanding the undisputed fact that the amount of water that would be needed each year to satisfy what he terms "the current uses" is 11,400 acre-feet.⁸ Secondly, applying a novel standard of water availability to the actual gauged flows of the Vermejo for the period 1916-1979, the Master concludes that "even looking at each individual month and each individual year, there does not exist a situation where

⁸ It should be noted that the Master's concept of "current uses" completely excludes the Canadian rights and reduces the Vermejo uses below the Dawson gauge by 3,315 acres.

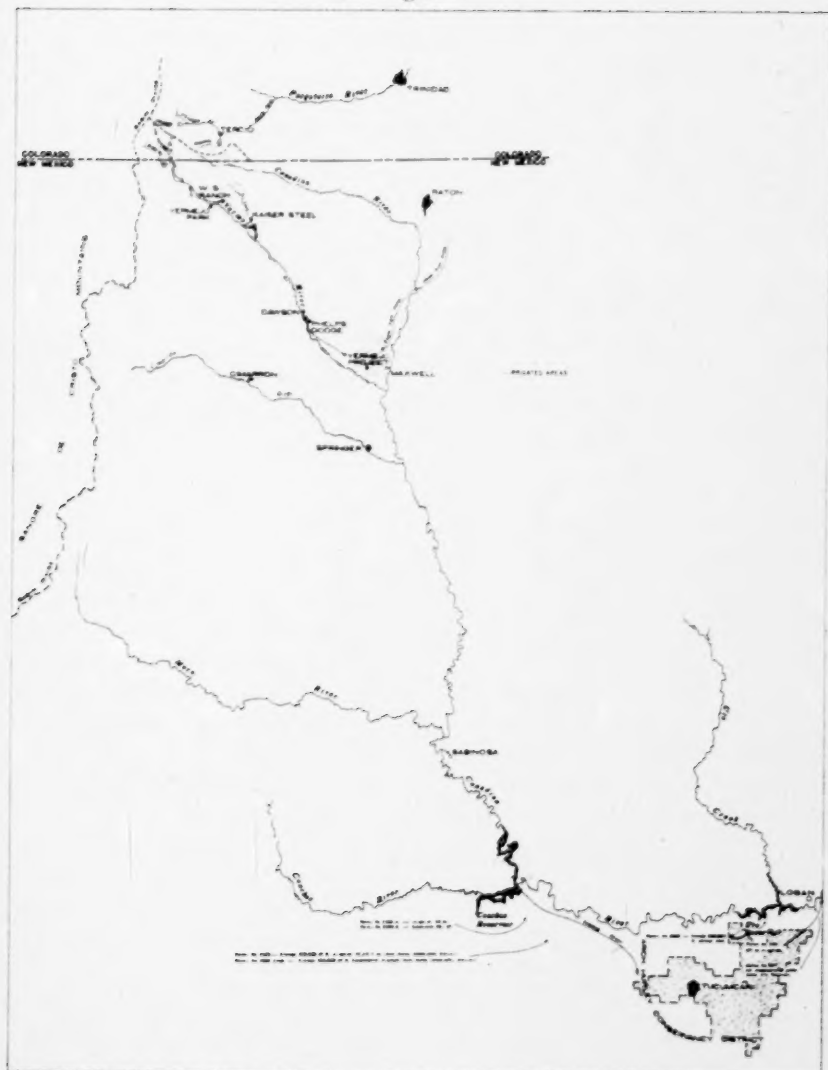
supply is 'intermittent' or 'materially deficient' . . . " *Id.* Oblivious to the import of the figures to which he refers, the Master reaches this conclusion when the figures unquestionably prove the opposite.

To understand what the Master has done, the Court will recall that the Dawson gauge is a U.S.G.S. gauge located on the Vermejo River just above Phelps Dodge's point of diversion. See Figure 1. The Dawson gauge has been recording the flows of the Vermejo since 1916, and until 1977 it was the only gauge on the river. It is this gauge which provided the data appearing in the appendix to the Master's report entitled Table 2. It should also be noted that the gauge is upstream from the Vermejo Conservancy District's point of diversion and that the gauged flows, in the Master's mind, are indicative of the supplies "available" to the District historically.⁹

It is agreed between Colorado and New Mexico "that the effect of the Colorado diversion would essentially be felt in its entirety by the Vermejo Conservancy District. . . ." ¹⁰ Brief of the State of Colorado Pursuant to Special Master's Order of December 20, 1982 at 52. Accordingly, in order to assess the Master's findings with regard to supply from the Vermejo, the Court must know the demand for water downstream from the Dawson gauge, *i.e.*, the water requirement in acre feet needed to supply Phelps Dodge, the Vermejo Conservancy District, and the private users who divert from the Vermejo Canal. As will become

⁹ The Court should also note that the Eagle Tail Canal is the District's diversion canal from Chico Rico Creek on the east side of the District. The supply available to the District from the Chico Rico is not discussed by the Master, but is discussed herein below.

¹⁰ Colorado has represented that New Mexico agrees that the adverse effect on the District would be the only adverse impact on New Mexico. As is discussed in detail in Point VI, however, the undisputed evidence proves that all Vermejo users would be injured in low flow years and that the Canadian River users of Vermejo water would be injured in high flow years. The District would be injured in every year.



apparent, the Master did not consider the demand when he surmised that an average of 10,900 acre feet "would seem to provide a fair amount of water. . . ." Report of May 31, 1983 at 11.

Calculating the amount of water needed to satisfy the diligently developed entitlement of the New Mexico users below Dawson, the record shows the demand to be 17,000 acre-feet.¹¹ Calculating the same requirement for the New Mexico entitlement as reduced by the Master for "lack of diligence," the demand at Dawson is 11,400 acre per annum.

Because neither the State of New Mexico, the Bureau of Reclamation, nor Congress could convince the Master that the Vermejo has been plagued by drought since 1950 and especially in the 1970s, he concluded that the reduced amount of acreage that was irrigated during the drought periods must have resulted from lack of interest on the part of New Mexico's farmers. Report of May 31, 1983 at 9. Consequently, he cut the Vermejo Conservancy District down to its average since 1955, *i.e.*, 4,379 acres, the private users from 476 acres to 312 acres, and Phelps Dodge from 301 acres to 150 acres. Had he actually assessed the supply in relation to even this reduced demand, however, he could not reasonably have concluded either that the supply was not materially deficient or that there has been no drought.

¹¹ The District's farm delivery requirement is 1.5 acre-feet per acre per annum, which results in a need for 11,100 acre-feet when multiplied by 7,379 acres. Adding a 37.5% loss from the reservoirs to the farms, results in a demand of 17,800. Tr. 1315. Because only 70% of the supply comes from the Vermejo, however, the demand is reduced to 12,400 acre-feet. Tr. 1303. Adding reservoir evaporation produces a required reservoir inflow of 14,700 acre-feet. Tr. 1286.

The private users' farm delivery requirement is 2.0 acre-feet, which produces a need for 952 acre-feet when multiplied by 476 acres. The total demand of the District and the private users is 15,650 acre-feet. In order to know the demand at the Dawson gauge, inflow between the gauge and the Vermejo Canal must be subtracted (800 acre-feet), Tr. 1406, canal loss added (1700 acre-feet), Tr. 1280, and Phelps Dodge's depletion (400 acre-feet) added, resulting in demand at Dawson of 17,000 acre-feet.

Looking at Table 2 in the Report of May 31, 1983, the five year period 1950-1954 shows an aggregate annual water supply at Dawson gauge of 22,100 acre-feet; the total demand for the same 5 year period was 85,000 acre-feet. Inexplicably, the deficit was not a drought period in the Master's mind. For the period 1950-1979, Table 2 shows a total supply of 297,720 acre-feet against a demand of 510,000 acre-feet. The Master views the deficit of 212,280 acre-feet as a plus.

Assuming as the Master did that the entire flow at Dawson is divertible, which it is not, the supply and demand was as follows:

<u>Year</u>	<u>Supply at Dawson Gauge</u>	<u>Demand at Dawson Gauge for Full Acreage</u>	<u>Surplus (+) or Shortage (-) of Supply</u>
1950	5,400	a.f. 17,000	-11,600
1951	1,480	17,000	-15,520
1952	6,210	17,000	-10,790
1953	5,710	17,000	-11,290
1954	3,340	17,000	-13,660
1955	24,930	17,000	+ 7,930
1956	3,360	17,000	-13,640
1957	16,140	17,000	- 860
1958	27,260	17,000	+10,260
1959	6,160	17,000	-10,840
(Total 50-59)....	(99,990)	(170,000)	(-70,010)
1960	5,890	17,000	-11,110
1961	19,910	17,000	+ 2,910
1962	12,920	17,000	- 4,080
1963	5,600	17,000	-11,400
1964	3,730	17,000	-13,270
1965	23,010	17,000	+ 6,010
1966	10,080	17,000	- 6,920
1967	8,440	17,000	- 8,560

<u>Year</u>	<u>Supply at Dawson Gauge</u>	<u>Demand at Dawson Gage for Full Acreage</u>	<u>Surplus (+) or Shortage (-) of Supply</u>
1968	14,380	17,000	- 2,620
1969	11,150	17,000	- 5,850
(Total 60-69)....	(115,110)	(170,000)	(-54,890)
1970	13,030	17,000	- 3,970
1971	5,660	17,000	-11,340
1972	4,680	17,000	-12,320
1973	12,920	17,000	- 4,080
1974	3,040	17,000	-13,960
1975	7,530	17,000	- 9,470
1976	6,640	17,000	-10,360
1977	7,900	17,000	- 9,100
1978	8,650	17,000	- 8,350
1979	12,570	17,000	- 4,430
(Total 70-79)....	(82,620)	(170,000)	(-87,380)
Total All Years..	297,720 ¹²	510,000 ¹³	-212,280

While these comparative figures illustrate how the Master purported to reach the "specific findings" in his report, it should be obvious to anyone that the figures don't support the Master's conclusions. On the contrary, they fly in the face of the Master's conclusions. In the 1970s, which is the period Colorado used to argue that the New Mexico entitlement should be radically reduced because of alleged lack of diligence, the demand was not met in any year. While the numbers show the drought the New Mexico experts, the Bureau of Reclamation officials, the water users, and Congress have recognized, the Master blinds himself

¹² These figures are taken from Table 2 in the Master's Report of May 31, 1983.

¹³ The demand shown is adjusted to account for the fact that the Chico Rico source furnishes approximately 30% of the Project water supply.

to their significance. Having set out to balance supply and demand, the Master did so without taking cognizance of the demand.

Conversely, the Master failed to correctly evaluate the supply. The Master found that the supply at the Dawson gauge, *i.e.*, 10,900 acre-feet on the average, was "more than enough" to supply all of the rights below the gauge, neglecting the Chico Rico and other non-Vermejo tributaries, which satisfy 30% of the demand. Taking into account the Chico Rico supply, as the above numbers do, the chronic and substantial shortages reflected by these figures are still experienced.

It is clear from an actual comparison of supply and demand that the Master should have concluded that water shortage prevented the full development of the irrigated acreage below the Dawson gauge. The Master concluded that the New Mexico users were not diligent even though the failure to irrigate the full entitlement was beyond their control. Accordingly, he reduced the District's entitlement to 4,379 acres from 7,379 acres, the private users from 476 acres to 312 acres, and Phelps Dodge from 301 acres to 150 acres. Thus blaming the users for an act of God, the Master concluded that the average of 10,900 acre-feet on the Vermejo was more than enough to satisfy the reduced "current uses." If the Court were to adopt *both* of the Master's erroneous premises, however, he is still grossly wrong. The following tabulation contrasts the supply at Dawson, albeit not fully divertible, with the demand for the Master's severely abbreviated New Mexico entitlement:

Water Year	Annual Discharge Vermejo River Near Dawson	Demand at Dawson Gauge for Reduced Acreage	Surplus (+) or Shortage (-) of Supply
1950	5,400	11,400	- 6,000
1951	1,480	11,400	- 9,920
1952	6,210	11,400	- 5,190
1953	5,710	11,400	- 5,690
1954	3,340	11,400	- 8,060
1955	24,930	11,400	+13,530
1956	3,360	11,400	- 8,040
1957	16,140	11,400	+ 4,740
1958	27,260	11,400	+15,860
1959	6,160	11,400	- 5,240
(Total 50-59)	(99,990)	(114,000)	(-14,010)
1960	5,890	11,400	- 5,510
1961	19,910	11,400	+ 8,510
1962	12,920	11,400	+ 1,520
1963	5,600	11,400	- 5,800
1964	3,730	11,400	- 7,670
1965	23,010	11,400	+11,610
1966	10,080	11,400	- 1,320
1967	8,440	11,400	- 2,960
1968	14,380	11,400	+ 2,980
1969	11,150	11,400	- 250
(Total 60-69)	(115,110)	(114,000)	(+ 1,110)
1970	13,030	11,400	+ 1,630
1971	5,660	11,400	- 5,740
1972	4,680	11,400	- 6,720
1973	12,920	11,400	+ 1,520
1974	3,040	11,400	- 8,360
1975	7,530	11,400	- 3,870
1976	6,640	11,400	- 4,760
1977	7,900	11,400	- 3,500
1978	8,650	11,400	- 2,750
1979	12,570	11,400	+ 1,170
(Total 70-79)	(82,620)	(114,000)	(-31,380)
Total All Years ..	297,720	342,000	-44,280

Adopting the Master's faulty premises, *i.e.*, using basin discharge as opposed to divertible flow to supply two thirds of the valid uses instead of the diligently developed entitlement, the Master still has an aggregate deficit of 44,280 acre-feet, with sustained deficient supplies in the 1950s, intermittent supplies in the 1960s, and prolonged, profound deficiencies in the 1970s. To the Master these figures reveal a consistent, positive supply.

New Mexico's essential objection to the Special Master's two reports in this case goes to the Master's inability to appreciate the significance of the evidence he expressly relies on. Our objection, however, also goes to the fact that the Master entirely disregards other evidence. With regard to the available supply, for instance, the record shows the actual prorations of water to the Vermejo Conservancy District's farms. A full ration of water is 1.5 acre-feet per acre. During the drought of the 1970s the prorations were:

<u>Calendar Year</u>	<u>Annual Water Proration (Acre-Feet/Acre)</u>
1970.....	.67
1971.....	.08
1972.....	.29
1973.....	.58
1974.....	.54
1975.....	.25
1976.....	.05
1977.....	.00
1978.....	.48
1979.....	.50

See generally N.M. Ex. No. F-37.

These figures comport with the supply and demand figures above. The Master, however, chose to ignore them.

Because of the way in which the Master elected to analyze the available supply, *i.e.*, by looking at annual average flows on the one hand and actual annual and monthly flows on the other, the above discussion analyzes the supply as if all of the water at the Dawson gauge were divertible in each year, which it is not. Assuming that it were, the Master's figures prove the opposite of what he concludes. To make matters worse, however, the Court has specifically rejected the methodology utilized by the Master, which we have followed in the above analysis to show that he is grossly in error even when he doesn't distinguish between basin discharge and divertible flows.

Early in equitable apportionment litigation, the Court perceived that average flows are necessarily inflated by flood flows which are not divertible. *Wyoming v. Colorado*, 259 U.S. 419, 471, 476 (1922); *Colorado v. Kansas*, 320 U.S. 383, 396-97 (1943). The principle is critical to the instant case. For example, over the 52 year period of record, 1927-1978, 1,900 acre-feet or 15% of the average annual flow of 12,800 acre-feet in the Vermejo River is attributable to the floods of 1941 and 1942. Tr. 1178; N.M. Ex. No. F-10. More importantly, however, as to each individual year the total flow for the year or for individual months is not helpful in explaining whether that amount of water was divertible, let alone divertible at the times needed for irrigation. Tr. 1198. Accordingly, the Court has held that the critical inquiry is into:

the amount of *divertible* flow at times when water is most needed for irrigation. Calculations of average annual flow, which include flood flows, are, therefore, not helpful in ascertaining the dependable supply of water usable for irrigation. *Colorado v. Kansas*, 320 U.S. at 397 (emphasis added).

The distinction is between "divertible flow" during the irrigation season and "average annual flow," the latter of which will not disclose whether the water was there when it was needed.

The point was emphasized further in *Wyoming v. Colorado*:

Colorado's evidence, which for convenience we take up first, is directed to showing the average yearly flow of all years in a considerable period, as if that constituted a proper measure of the available supply. We think it is not a proper measure. This is because of the great variation in the flow. . . . 259 U.S. at 471.

* * *

... [T]he average of all years is far from being a proper or safe measure of the available supply. An intending irrigator . . . based on such a measure would be almost certainly confronted with drought when his need for water was greatest. Crops cannot be grown on expectations of average flows which do not come, nor on recollections of unusual flows which have passed down the stream in prior years. Only when the water is actually applied does the soil respond. 259 U.S. at 476.

The Special Master recognized that "[i]t is true that the guidelines set forth in *Wyoming v. Colorado* are appropriate and should be applied in this case." Report of May 31, 1983 at 10. Instead of applying the express guidelines of "divertible flow" and "dependable supply," however, the Master tried to create different guidelines. He makes reference to the following paragraph concluding the Court's discussion in *Wyoming v. Colorado*'s misuse of averages:

But we are of opinion that the computations and conclusions of the witness, even when revised in the way we

have indicated, are based too much on the average flow, and not enough on the unalterable need for a supply which is fairly constant and dependable, or is susceptible of being made so by storage and conservation within practicable limits. By this it is not meant that known conditions must be such as give assurance that there will be no deficiency even during long periods, but rather that a supply which is likely to be intermittent, or to be materially deficient at relatively short intervals, does not meet the test of practical availability. 259 U.S. at 480.

Noting that averages "can be used to reach nearly any result," the Special Master surmises that "looking at each individual month and each individual year, there does not exist a situation where supply is 'intermittent' and 'materially deficient at short intervals.'" ¹⁴ Report of May 31, 1983 at 11. While it is apparent from the supply and demand figures shown above that the supply on the Vermejo is not only intermittent and materially deficient at short intervals, it is also apparent that it has been materially deficient for long periods of time. For instance, in the five year period 1950-1954, the demand at the Dawson gauge was 85,000 acre-feet while the aggregate supply was only 22,100 acre-feet. During the two year period 1963-64, the demand was 34,000 acre-feet and the supply was 9,330 acre-feet. For the period 1971-1978, the worst of the post-1950 drought years, the demand was 136,000 acre-feet and the supply was 57,000 acre-feet. Because the Master, however, apparently did not have the demand in mind, he did not see the deficiencies.

It is obvious that the Master did not understand the significance of the methods and figures he used to determine

¹⁴ New Mexico testified that the Court's criticism of averages could not be overcome unless a daily study were done of flow and demand. Tr. 1178. For the period 1950-1979, however, the analysis need not be so precise in order to determine that the supply has been materially deficient.

available supply. He also ignored the telling testimony of Colorado's expert witness, Mr. Helton. Mr. Helton admitted that the use of average annual figures obscured flood flows and peak runoff. Tr. 395. He admitted that "most of the water is produced by rainstorms." Tr. 417. He testified further that Colorado made no analysis to determine whether the water was available in a realistic sense, no analysis of how much average runoff could have been intercepted by the water users, and no analysis of how and when the water arrived at the Vermejo Conservancy District's headgate. Tr. 419, 422. Following this line of questioning on cross-examination, Mr. Helton reiterated the fact that when Colorado is talking about "water available at the diversion points," it is not talking about divertible water. Tr. 423. Concluding the subject on cross-examination, he could not say anything about the ability of the water users to divert water without analyzing when and how the water got to the diversion points. Tr. 424. Colorado's own witness, in other words, conceded that Colorado never intended to present the water supply evidence that the Court has specifically asked for in *Colorado v. New Mexico*. 103 S.Ct. at 548-549. Under the law of this case, as well as the previous equitable apportionment cases, Colorado not only has not met its burden, but never tried to. See, e.g., *Wyoming v. Colorado* at 471, 476; *Colorado v. Kansas* at 396-97.

While Colorado's evidence says nothing about true availability, New Mexico's expert witnesses, Bureau of Reclamation officials, and the water users themselves testified from detailed studies and experience as opposed to speculation that the river has not supplied the existing demand historically.¹⁵

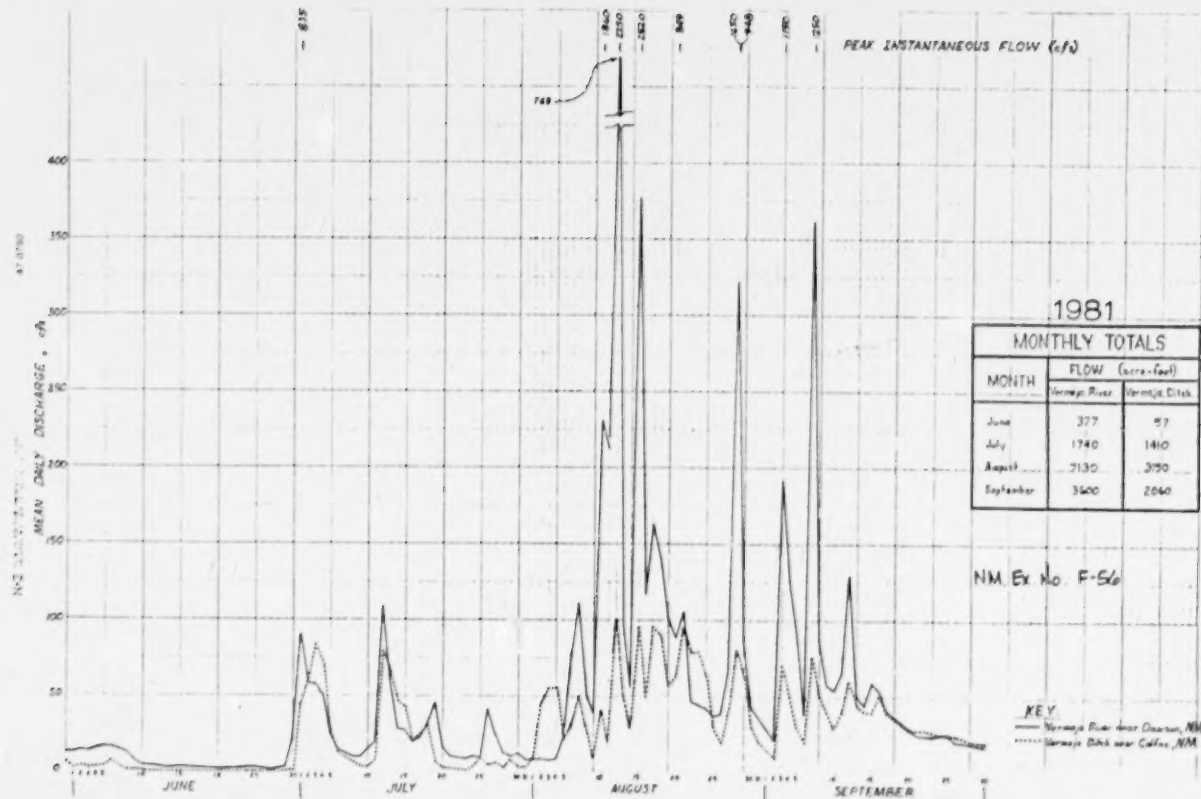
¹⁵ In November, 1980, Congress considered H.R. 8298, which was designed to relieve the Vermejo Conservancy District's repayment obligation arising out of the project's rehabilitation. As described by Representative Lujan, the legislation "relieves [the District] of its repayment obligation to the United States until such time as the money becomes available. . . since the quantity of

As the Court itself has done twice, New Mexico's principal expert witness, Mr. Mutz, explained that the difference of opinion between Colorado and New Mexico lies in the fact that Colorado did not attempt to analyze divertible supply and that the Court cannot use average annual discharge to assess what has been available to the water users. Mr. Mutz testified that you could not reasonably use average annual or monthly figures to study the amount of water that is actually available to the District or to other users. Tr. 1136, 1188-90. To further make his point, Mr. Mutz prepared a flow duration curve of the Vermejo River based on mean daily flow records. Tr. 1188; N.M. Ex. No. F-18. The flow duration curve proves, without room for dispute, that the dependable water supply cannot be determined from average annual or monthly stream flows. Tr. 1188; *see also* N.M. Ex. No. F-12.

Perhaps the most illustrative examples in the record of the Court's view that averages reflect flood flows and inflate the actually available supply are the hydrographs that we tendered in evidence to compare the flows at the Dawson gauge, which include flood flows, with the flows in the Vermejo Canal, which have recently become known by the U.S.G.S.'s installation of a gauge. The hydrographs compared mean daily discharge, which as Mr. Mutz testified, produce the level of analysis needed to know whether the monthly or annual flows are in fact divertible. *See, e.g.*, N.M. Ex. No. F-56.

At trial there was conflicting evidence relating to the amount of water spilling past the Vermejo Conservancy District's headgate. Water spilling past the District's headgate flows on down the Vermejo River into the Canadian River and is a part of

water that was to have been available to irrigate the crops has consistently fallen extremely short." 126 Cong. Rec. H 11183 (daily ed. Nov. 21, 1980) (Statement of Rep. Lujan). It should be pointed out that the first draft of the legislation would have permanently excused the debt. The act that was finally passed, however, temporarily relieved repayment on the theory that the drought cycle would change. The water supply of the last two years would appear to justify Congress' decision.



the supply available to New Mexico users on that stream. The largest of those users is Arch Hurley Conservancy District whose water supply has been 13% short historically. Tr. 1368-78. There were also conflicting contentions as to the amount of water divertible by the Vermejo Conservancy District. Colorado asserted that the District's diversion structures are capable of diverting the entire flow of the Vermejo River.

At the beginning of trial, a gauge was installed on the Vermejo Conservancy District's Vermejo canal just above Stubblefield Reservoir, the first served by the canal. The gauge was installed and is operated by the U.S.G.S. The records for the years 1981 and 1982, which were not available until after trial, show that in August and September of 1981 approximately 5,500 acre-feet spilled past the Vermejo Conservancy District's diversions in the form of peak flows, and in August and September of 1982 approximately 6,500 acre-feet spilled; a total of approximately 12,000 acre-feet of Vermejo River water was thus contributed to the supply of the Canadian River below the Vermejo Project in these two years. The records also show that during the period June through September, 1981 and May through September, 1982, the discharge of the Vermejo River at the Dawson gauge totalled 26,710 acre-feet and the discharge in the Vermejo Canal, *i.e.*, the amount of water at the Dawson gauge that was actually divertible by the Vermejo Canal, was 12,490 acre-feet; 2,220 acre-feet of depletion occurred between the Dawson gauge and the Vermejo Canal gauge and 12,000 acre-feet spilled past the Vermejo Conservancy District's diversion works during the periods of short duration flood flows.

Experts are not needed to read the hydrographs. On August 9, 1981, for example, in N.M. Ex. No. F-56 the Court can see the flood on the Vermejo. While it started to subside during the evening of the 9th, a greater flood occurred on the 10th. The graph shows that things returned to normal by the 13th, only to

be greeted by another major flood on the 14th. Essentially all of the water between the dotted lines and the solid lines in the hydrograph is flood flow obscured in the monthly flow figures at the Dawson gauge, which cannot be diverted by the Vermejo Conservancy District. It is part of the water that flows past the District's diversion structures into the Canadian River, where it is captured and regulated for beneficial use in Conchas and Ute Reservoirs. While adding unquestionable proof that the Vermejo River is not the closed system the Master has told the Court it is, where "very little, if any, water escapes from the diversion works of the Vermejo Conservancy District" (Report of December 31, 1981 at 4), the hydrographs also vividly show that average monthly and annual flows are not all divertible. The hydrographs disprove the Master's erroneous findings and vindicate the position taken by New Mexico all along.

The Special Master's discussion of alternative sources of water supply is directly contradicted by all the evidence in the record. Without understanding that the sources to which he refers are at a great distance from the Vermejo or have been fully used historically and can in no way relieve the demand on the Vermejo, the Master states that "Vermejo Park Corporation, Kaiser and the Vermejo Conservancy District all have other water sources." Report of May 31, 1983 at 17. What the Master fails to understand is that these "other sources" are not sources of new water to relieve the demand on the Vermejo, but rather are sources that are now and have been fully used.

For example, for the Vermejo Park Corporation the Master states that there was "testimony indicating other sources of irrigated lands . . . , sources dependent on 'a completely different water system.'" Report of May 31, 1983 at 3. His reference is to the fact that Vermejo Park owns some hay producing lands on the Cimarron River. No explanation is offered of any relation

between the Vermejo and the Cimarron, and none exists. The Master may as well have found that Vermejo Park owns irrigated land on the Potomac.

The Master's finding respecting the Vermejo Conservancy District is even more untenable:

One major alternative source is the Chico Rico providing approximately 35% of the District's water. Other sources include the Willow, Crow, Curtis and Salt Peter Creeks. They may provide up to 10% of the water used by the District. *Obviously, development of the entire allotment of water from the Vermejo is not a top priority in the District. Complete and diligent development does not appear to be essential, in part because of alternative sources . . .*" Report of May 31, 1983 at 8-9 (emphasis added).

The Master's logic is contradictory. The "alternative sources" to which he refers are part of the historical supply to the District. It is no secret that the District has two points of diversion, one on the Vermejo and one on the Chico Rico. They are part of the works that provide the existing, deficient supply. That the Master can somehow find this fact cogent in the context of the Court's request for specific findings relating to alternative sources of supply is inexplicable.

The evidence reveals no alternative source of supply for any of the existing uses of Vermejo water. Tr. 1183, 1331, 1752-1803; N.M. Ex. No. F-18. The Bureau of Reclamation studies made in relation to the rehabilitation of the Vermejo Conservancy District, confirmed by private consultants, concluded that there are no economically feasible reservoir sites to regulate the surface supply and no alternative ground water sources. Tr. 1353-55. Studies undertaken by Vermejo Park Corporation and Kaiser Steel Corporation also establish that there is no

appreciable ground water storage along or near the Vermejo and that there are no aquifers of any importance in the area. Tr. 1735, 2089. A New Mexico geohydrologist testified that "alternative sources of water are for practical purposes not available." Tr. 1795. None of this testimony was questioned, much less impeached or rebutted.

Colorado presented no evidence on this question but suggested the possibility of alternative sources of supply for the City of Raton and Kaiser. According to Colorado, 3,000 acre-feet of San Juan-Chama water is available for use by Raton. The San Juan-Chama Project water, however, is Colorado River water made available under New Mexico's entitlement in the Upper Colorado River Compact. Tr. 2440. In order for that water to be used in Raton, Rio Grande water originating in the headwaters of the Red River, a tributary of the Rio Grande, would have to be taken transmountain to Eagle Nest Lake and then piped some 60 miles to Raton. Colorado put on no evidence of the economic or physical feasibility of such a project. In fact, a lower cost alternative has been undertaken. The Master made no findings of fact on economic or physical feasibility either, as the Court requested. 103 S. Ct. at 546.

With respect to Kaiser, Colorado tried to suggest that Kaiser's rights to some 800 acre-feet of water from the Cimarron River, some 50 miles from the York Canyon mine, could be used as an alternate supply. Tr. 1728. Mr. Taylor, the engineer in charge of coal operations for Kaiser, testified that such a project would not be economically feasible and that the alternative was to shut down. Tr. 1731-32. Colorado also attempted to suggest that Kaiser could operate its mine using its York Canyon diversion in lieu of its Vermejo River diversion. Tr. 1743. Mr. Taylor explained that the York Canyon ground water supply was "very intermittent." Tr. 1744-45. Elsewhere, it was testified that the York Canyon supply would be pumped out in a couple of days if Kaiser were forced to rely on it. Tr. 1451.

The Master's treatment of the other factors listed by the Court as relevant to the available supply of Vermejo water is equally vacuous. With regard to the needs of the existing New Mexico users for a continuous supply the Master reached the pointless conclusion that "the only user with a need for a continuous supply of water is Kaiser; the other users engaged in irrigation, requiring water approximately four to five months out of the year." Report of May 31, 1982 at 16. The Master misses the point. The need for a continuous supply does not go to whether a given water user irrigates five months out of the year or twelve months out of the year, but rather to the fact that the users cannot depend upon flood flows in one year which don't materialize in another. *See generally, Wyoming v. Colorado*, 259 U.S. at 471-76. In this regard, the Master made no findings at all, thus complementing his acceptance of average annual flows as a demonstration of his obliviousness to streamflow variation.

Similarly, with regard to the possibility of enhancing the supply through regulation, the Master unperceptively states that "the Vermejo Conservancy has a reservoir system" Report of May 31, 1983 at 17. As discussed in Point VI, however, the Vermejo has historically provided no carryover water to conserve. Colorado put on no evidence in this regard, and the Master made no inquiry into the feasibility or practicability of any reservoir project. Forgetting the unimpeached evidence that there are no economically feasible reservoir sites to regulate Vermejo waters (Tr. 1353-55), the Master posits the inconsequential fact that the District has a system of reservoirs. This represents the extent of the Master's analysis of this aspect of available supply.

The final area in which the Master erroneously finds that water might be conserved is through "administration." In reality, this is no finding at all, but rather is a statement of a totally unfounded conclusion which will be discussed in detail in Point IV.

In conclusion, the Master's analysis of the available supply of water is fatuous. Instead of attempting to learn from the evidence the amount of Vermejo water actually divertible by the New Mexico users, the Master irrationally adopts average annual flows as his measure of available supply. He then looks at the figures and not only fails to comprehend their significance, but arrives at a conclusion which is diametrically opposed to what the figures unquestionably show. The Master then proceeds to adjust the "available" supply by finding that "with proper conservation measures, there is an adequate water supply to satisfy the needs of all users." Report of May 31, 1983 at 21. He does so without identifying the conservation measures or discussing their feasibility. Finally, the Master finds that the demand for water on the Vermejo can be relieved with some of the water already used, a contradiction in physics which apparently eludes him. In short, the Master's treatment of available water supply is hopelessly inadequate. While the Master reaches conclusions adverse to New Mexico, he is not able to justify them with reason or fact.

POINT IV

THE MASTER'S FAILURE TO CONSIDER THE EVIDENCE AND TO MAKE SPECIFIC FINDINGS REGARDING THE STATES' RESPONSIBILITIES TO CONSERVE WATER IS COMPLETELY UNRESPONSIVE TO THE COURT'S MANDATE.

The Special Master's treatment of the extent to which reasonable conservation measures in both states might eliminate waste or inefficiency reveals the Master's double standard. On the one hand, the Master states that "it is not for the Master or for New Mexico to say that reasonable attempts to conserve water will not be implemented by Colorado." Report of May 31,

1983 at 21. On the other hand, he commands that "reuse should be developed" for stockwater in New Mexico! *Id.* at 18. No reference is made to the relevant evidence and no specific findings are made. Indeed, evidence bearing directly on this issue was excluded by the Master when he refused to consider New Mexico's analysis of use of water from stockwater ponds. See Motion to Receive Evidence, March 5, 1983; Amended Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law, at 4-6. The Master simply rambles on about an undefined, generalized need for conservation, suggesting that "perhaps" New Mexico could do this and "perhaps" it could do that. Report of May 31, 1983 at 19. In a word, the Master's treatment of conservation measures is entirely conjectural.

The law concerning the duty to conserve the waters of an interstate stream is clear. The requirement is one of "conservation within practicable limits . . ." *Wyoming v. Colorado*, 259 U.S. 419, 484 (1921). This qualification was reaffirmed in the first phase of this case: "the extent of the duty to conserve that may be placed upon the user is limited to measures that are 'financially and physically feasible.'" 103 S. Ct. at 546, 550.

Conservation is undertaken to solve one of two problems: waste or inefficiency. Waste and inefficiency are distinct terms of art. To waste water is to expend it needlessly, either willfully or through neglect. It is a species of tort. See, e.g., §72-8-4 (N.M.S.A. 1978). In every western state, including New Mexico and Colorado, the concept of waste does not include the unavoidable loss of water incident to its application to beneficial use. *Stroup v. Frank A. Hubbell Co.*, 27 N.M. 35, 192 P. 519 (1920); *Combs v. Agricultural Ditch Co.*, 17 Col. 146, 28 P. 966 (1892). In this case, Colorado mistakenly used the concept of waste interchangeably with inefficiency. The Master accepted

this confusion of terms without any effort to independently examine the facts or to correct Colorado's misapplication of the terms. Used properly, the term waste has no relevance to the Vermejo River water users. Colorado presented no evidence of waste by any user in the Vermejo or Canadian River systems.

Like waste, inefficiency is a term of art. It is a function of uniformity of distribution, the slope of the lands, evaporation, leakage from storage and distribution systems, as well as climate and porosity of soils. The efficiency of an irrigation project can be improved by changing the nature of the project works, e.g., by lining ditches, installing pipelines, or building reservoirs to regulate flows. The efficiency of a farm can be improved by installing drip or sprinkler irrigation systems, by improved irrigation practices, or by leveling of irrigated lands. Climatological conditions and porosity of soils cannot be changed. To the extent that inefficiency is a function of these conditions, man has no control over it.

Irrigation efficiency is defined as "the percentage of applied irrigation water that is available for consumptive use." N.M. Ex. No. E-2. When measured at the farm headgate, it is called farm irrigation efficiency; when measured at the field it is designated field irrigation efficiency; and when measured at the point of diversion, it may be called project efficiency. See American Society of Civil Engineers, *Consumptive Use of Water and Irrigation Water Requirements*, pp. 54-61, N.M. Ex. No. D-2, p. 5.

To understand the superficiality of the Master's treatment of conservation, the Court must be made aware of the relevant evidence in the record, none of which is referenced or weighed by the Master. The Court must also know that Colorado's case respecting conservation was nothing more than unfounded innuendo and accusation, none of which was supported by fact.

Conservation by the Vermejo Conservancy District

District Efficiency and Conservation Measures

In a nutshell, the Master originally proposed that the Court make water available to C. F. & I. by performing a mercy killing of the Vermejo Conservancy District because, in his view, it "has never been an economically feasible operation." Report of December 31, 1981 at 23. The Master reiterated his conclusion in his Additional Factual Findings:

At the heart of New Mexico's water problem is the Vermejo Conservancy District. Whether lack of administration, lack of diligence, lack of resources or lack of ability is the cause, there is little doubt that the District has failed as a water reclamation project and has serious financial and operational problems of its own. (Tr. 164-169). Several of the conservation problems already discussed are present in the District. Furthermore, there is a problem of loss through evaporation in the District's seven reservoirs. (Tr. 863, 1296-1299). The District has a 32% efficiency to farm headgates and an overall system efficiency of 24.6%. (Tr. 2576). New Mexico claims that the District falls in the middle range in reclamation project efficiencies. (Tr. 1410-1411). However, the existence of other low efficiency systems is not justification for failure to fully develop water sources here. Report of May 31, 1983 at 20.

The significance of the fact that the District falls in the middle range of reclamation project efficiencies eludes the Master. Regional practice is the best evidence of practicability. One wonders how the Master can impose a Utopian standard of excellence on New Mexico and the Bureau of Reclamation and no standard on Colorado without recognizing the contradiction and the inherent double standard that it represents.

The Master's reliance on Colorado's arguments is misplaced. Early in trial Colorado generalized about the efficiency of the Vermejo Conservancy District. Colorado's expert, Mr. Helton, testified that "the Conservancy District tends to operate five reservoirs when one or possibly two would suffice." Tr. 239. He also stated that the District could "easily offset the effects of the Colorado diversions" by "implementing reasonable management practices." Tr. 240. Without suggesting what conservation measures might be undertaken, except for the installation of a closed stockwatering system, Mr. Helton concluded that "through some management technique or change in the Vermejo headgate [the District could] improve [its] overall system efficiency from 32.92 to 40%." Tr. 242. A similar obligation was thought appropriate for the District's individual farmers. With no indication of how they might do so, Mr. Helton explained that they should "improve their on-the-farm efficiency [from 50%] to 70%." Tr. 243. Colorado's witness concluded that these efficiencies "are well within the range we could reasonably expect could be achieved by the Conservancy District." Tr. 244.

When it came time to prove its assertions, Colorado failed. Mr. Helton explained that the Vermejo Conservancy District could have used "all" of the average watershed discharge of 18,888 acre-feet by the "installation of a domestic water system...system improvement...[and] some better management techniques..." Tr. 503. When asked specifically what improvements could be made, Mr. Helton responded: "Sir, I have not done that kind of an in-depth study. I have not done a study, as a matter of fact, at all." Tr. 504. When asked how these unspecified conservation measures would be financed, Mr. Helton could offer "no recommendation..." Tr. 504. When asked whether new structures or reservoirs could be built to retain and regulate flood flows in which downstream users had vested rights, Mr. Helton did not deem the downstream rights "relevant." Tr. 303, 280-300. At a different point in his

testimony he admitted that under Colorado law the Canadian River users would have a vested right in flood flows from the Vermejo. Tr. 428.

In contrast to Mr. Helton's testimony, Mr. Mutz explained that the Vermejo Conservancy District is not being operated inefficiently and that there are no practicable or financially feasible conservation measures available to the District's farmers. With respect to the project efficiency of the District, Mr. Mutz testified that the 60 miles of canals in the Vermejo Conservancy District are not at all uncommon in reclamation projects. Tr. 1312. Mr. Mutz also testified that the Vermejo Conservancy District is utilizing its reservoirs as efficiently as possible. Tr. 1363. Similarly, the official of the Bureau of Reclamation responsible for the operation of the Vermejo Conservancy District, Richard Ochs, testified that any inability in the District to maintain diversion or delivery works has been caused by water shortage, not imprudent irrigation practices. Tr. 1628.

With respect to the feasibility of conservation measures, Mr. Mutz explained that no water user can design diversion works and canals that would intercept peak flows.¹⁶ Tr. 1296. The Bureau of Reclamation investigated the possibility of reservoir storage on both the Vermejo and the Chico Rico drainages for the Vermejo Conservancy District and found that no additional supply could be developed that was economically feasible. N.M. Ex. No. C-1, C-2, Tr. 1350-55. The Vermejo Conservancy

¹⁶ The peak flows are depicted graphically in tendered N.M. Ex. No. F-56, at p. 50, above. On August 15, 1982, for example, the flow at the Dawson gauge increased 3,400 cfs in less than two hours. The Vermejo Canal diverted only about 135 acre-feet on August 15, and about 810 acre-feet spilled past the diversion into the Canadian. These flood flows are captured and regulated in Conchas and Ute Reservoirs downstream. It is absurd to think that the District should be required to build a diversion dam and conveyance works capable of diverting such flows.

District could not afford either the capital cost of installing sprinkler systems or the annual cost of energy to pressurize the sprinklers. Tr. 1362. Mr. Ochs testified that Colorado's suggestion that the Vermejo Conservancy District could make improvements in efficiency by reasonable conservation measures was unfounded. Tr. 1628. He testified that it is not economically feasible for the Vermejo Conservancy District to undertake to modify its diversion works to more efficiently divert water or to increase the amount of water divertible. Tr. 1594. Colorado did not question this testimony.

In contrast to Mr. Helton's unfounded and unsupported suggestion that the District could operate "one or possibly two" reservoirs instead of five, Mr. Ochs explained that the District officials were operating the District's reservoirs as efficiently as possible and that all of the reservoirs were needed to serve the District's lands. Tr. 239, 1638. He explained that the District's farmers do not waste or spill water that could be used on their farms. Tr. 1660. None of Mr. Ochs' testimony with regard to efficiency was questioned, much less impeached on cross-examination. *See also*, Tr. 1363, 1950.

On rebuttal Colorado neither attacked nor disproved any of the testimony of the New Mexico officials, the Bureau of Reclamation officials, or the New Mexico water users regarding efficiency. Tr. 2549-2674. Although Colorado argued that the Vermejo Conservancy District was "extremely inefficient," Colorado could not dispute that there are many irrigation projects with efficiencies in the range of the District's. Tr. 2576, 1410.

On surrebuttal Mr. Mutz showed that the efficiency of the Vermejo Conservancy District is 54%, discounting off-stream evaporation loss. Tr. 2719. New Mexico Exhibit No. F-50 is a tabulation of federal reclamation projects, showing their efficiencies. The Vermejo Conservancy District falls in the

middle of the range of efficiencies. Tr. 2721. Most of the reclamation projects tabulated in New Mexico Exhibit No. F-50 have on-stream reservoir storage. Tr. 2721. Evaporation from on-stream reservoirs is not accounted when computing project efficiency. If reservoir evaporation were added into the computation of efficiency for all of the projects in this exhibit, the project efficiency of the Vermejo Conservancy District would still compare favorably. Tr. 2721-27.

In a final attempt to undermine the fact that the overall efficiency of the Vermejo Conservancy District of 33% compares favorably with many western reclamation projects, Colorado attempted on cross-examination to distinguish between projects with on-stream reservoir storage and off-stream reservoir storage. Tr. 2730-46. Mr. Mutz's responses, however, clearly showed that the distinction is illogical. Reservoir evaporation is a necessary incident to providing water for beneficial use whether the reservoir is on-stream or off-stream and must be excluded or included consistently in making comparisons. Tr. 2727. The Rio Grande Project, as an example, loses over 100,000 acre-feet a year from an on-stream reservoir. Tr. 2739. Either way the Master compares efficiencies — including or excluding reservoir evaporation — the unimpeached evidence shows that the Vermejo Conservancy District falls well within a common, acceptable range. The overall efficiency of 33% is within the range of 30%-40%, within which numerous irrigation projects fall. Tr. 1410. The project efficiency of 54% falls in the middle of the projects tabulated in New Mexico Exhibit No. F-50. Tr. 2721.

While Colorado could not establish that the project efficiency of the Vermejo Conservancy District was inordinately low, its attempt to do so would not have been dispositive in any event. As reiterated in *Colorado v. New Mexico*, the standard used to determine whether a proposed conservation measure is

reasonable is whether it is "financially and physically feasible." 103 S. Ct. at 546; *cf.*, *Wyoming v. Colorado*, 259 U.S. at 484. In this regard, Colorado presented no evidence. Tr. 66-632, 2549-2701. Even if it were assumed that a particular irrigation project had a low efficiency, that fact would not indicate whether the local farmers could manage to increase the efficiency. The law did not deter the Master, however:

New Mexico argues that Colorado has merely pointed out areas of inefficient water use without making viable suggestions which would reduce or eliminate the inefficiency. It is the opinion of the Master that New Mexico's inefficient water use should not be charged to Colorado. Report on May 31, 1983 at 20.

In the Master's opinion, New Mexico must improve efficiency notwithstanding the fact that it is unreasonable or impracticable to do so. By contrast, the Master is of the opinion that "it is not for [him] or for New Mexico to say that reasonable attempts to conserve water will not be implemented by Colorado." *Id.* at 21.

The Closed Domestic/Stockwater System

Perhaps in recognition that the evidence shows that the project efficiency of the Vermejo Conservancy District is not inordinately low, that Colorado could suggest no specific improvements, and that no attempt was made to analyze whether any conservation measure was financially and physically feasible, Colorado focused its attention on the District's domestic and stockwater system. Justice O'Connor noted that the District had employed an engineering firm to investigate the feasibility of constructing a closed system to deliver domestic and stockwater to the District's landowners. 103 S. Ct. at 550, n. 2. New Mexico's evidence showed that if the District were to install an underground pipe system instead of utilizing the 60 mile network

of open canals to deliver stockwater, especially in the winter months, some 1,935 acre-feet lost through seepage and evaporation could be saved for irrigation. N.M. Ex. No. E-3, p. 18.

The closed system is now a reality. The issue raised by Colorado is not whether it could have been built, but whether it will conserve enough water to facilitate a new use in Colorado. The evidence shows that the water saved by the closed system will provide irrigation water for the Vermejo Conservancy District but that the water salvaged will not fully satisfy its demands. According to the standard reiterated by the Court in *Colorado v. New Mexico*, the new stockwater system will not "facilitate Colorado's proposed uses." 103 S. Ct. at 546. It is not a conservation measure which "might offset the proposed Colorado diversion" because it could not begin to offset the proposed diversion until the existing requirements for water in New Mexico are satisfied. 103 S. Ct. at 547.

The history of the closed system illustrates the diligence of the Conservancy District's farmers. In order to investigate the possibility of constructing a closed stockwater system, the Maxwell Cooperative Water Users Association was formed about ten years ago, long before this lawsuit was contemplated. Tr. 2762. In the decree in *Phelps Dodge Corp. v. W.S. Land and Cattle Co.*, No. 7201 (D.C.Cty. Colfax 1941), the individual farmers living near Maxwell were adjudicated stock and domestic rights. N.M. Ex. No. G-2. Originally, water was diverted at the District headgate, run through the system canals to the individual farms, and diverted into cisterns for domestic use. Tr. 2773. At the time, this method of distribution was the only method available to the District's farmers. The local ground water supply is inadequate in both quantity and quality for even domestic wells, and the Water User Association's initial attempt to produce water from a community well failed for lack of supply. N.M. Ex. No. E-3, Tr. 1437.

After the Maxwell Cooperative Water Users Association was formed, the Association applied to every conceivable private, state, and federal agency to obtain loan or grant money to finance the pipeline project. Tr. 2768. Leonard Knox, Jr., the president of the Maxwell Cooperative Water Users Association and member of the board of directors of the Vermejo Conservancy District, testified that the primary reason they undertook to build a closed system was because they had experienced historical shortages for irrigation and they believed the water thus conserved would help alleviate the shortage. Tr. 2765. After a painstaking effort, the Association was able to obtain a grant from the Agricultural Stabilization and Conservation Service and to borrow \$546,884.93 from the Farmers' Home Administration. Tr. 2763-70.

Commissioned by the Maxwell Cooperative Association, using funds provided by the State of New Mexico, the Dennis Engineering Company Report demonstrated that a closed system could conserve nearly 2,000 acre-feet annually. N.M. Ex.No. E-3. Once the funding was obtained, the job was let to J.R. Hale Construction Company of Albuquerque. In February, 1983, the project was completed. Two wells were drilled in the alluvium next to the Vermejo River. Water rights were transferred to the new point of diversion. Forty-eight miles of pipeline were laid three feet underground, and a 60,000 gallon storage tank was installed. After 10 years of effort and persistence, the first meter was installed on February 18, 1983. See Amended Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law, at 4-6.

The last release of stockwater through the Vermejo Conservancy District's canals was on October 15, 1982. As was testified by New Mexico's witnesses at trial, the farmers in the District intend to apply the water conserved by the new system to their lands. Tr. 2766. Even Mr. Helton, Colorado's principal

witness, testified that the Conservancy District farmers had worked for years to fund the closed stock watering system. Tr. 2672.

The records of the Vermejo Conservancy District show that its farmers have received a full proration of water only two years out of the 25 years since the beginning of the operation. N.M. Ex. No. F-37. Based upon actual experience, the New Mexico water users testified to historical shortage. Tr. 1810-12, 2124, 2127, 2178, 2179, 2214. The Bureau of Reclamation concurred with the New Mexico users. Tr. 1548. Both the Bureau's Regional Director and the engineer responsible for the Vermejo Project operation personally observed the shortage of supply over the years. Tr. 1548, 1627. Congress recognized the shortage when it passed legislation temporarily relieving the District of its repayment obligation. Act of December 19, 1980, 94 Stat. 3221. New Mexico's expert witness also testified that chronic shortages have existed. Tr. 1135-36, 1305-10. See Point II. Even Mr. Helton recognized that the Conservancy District farmers would have irrigated more land historically if they had had the water supply. Tr. 2671.

The evidence shows unequivocally that the 1,935 acre-feet of water hoped to be conserved by the closed stockwater system is needed to relieve present shortages. Tr. 1362; *cf.*, Point II. The evidence also shows that the water thus conserved will not give the Vermejo Conservancy District a full irrigation supply. Tr. 1439. Accordingly, the water saved by the closed system cannot "offset" a proposed diversion in Colorado. As testified by the Bureau of Reclamation officials, any award of this water to Colorado would further exacerbate the current shortage to legitimate demand in New Mexico. Tr. 1554, 1653.

In light of the facts, the Special Master weighs no equities and makes no findings. Instead, he contradicts himself and concludes that there is more than enough water for everyone:

As for major projects concerning water conservation, New Mexico is to be commended. A closed stockwater system has been completed since the start of this trial. The effort to provide funding and construction has been considerable. Users of the system hope to conserve nearly 2,000 acre-feet of water. (Defendants' Brief on Remand, pp. 43-45). There seems little point in further discussion of the benefits of a closed system. *The system exists and its benefits are to be felt by New Mexico users.* New Mexico claims, however, that the water conserved by the system is needed by New Mexico users. The Master is of the opinion that based on the evidence in its entirety, there is already sufficient water if New Mexico would take every opportunity to develop their resources fully. With proper conservation measures, there is an adequate supply to satisfy the needs of all users. Report of May 31, 1983 at 20-21 (emphasis added).

In the same breath, the Master allows New Mexicans to enjoy the benefits of their labors and then gives the water conserved to C. F. & I. He then turns back to the bewildered New Mexicans and explains that everything will be alright because it's within their power to get blood out of a turnip. The Master should have addressed the legal and equitable basis of depriving people who have incurred a substantial financial obligation to conserve water of the benefits of their labors. On the one hand, the Master congratulates the District's farmers for having undertaken initiatives to conserve water and then recommends stripping them of the water conserved because "there seems little point in further discussion of the benefits of a closed system." *Id.* at 20.

Conservation by the State of New Mexico

Administration

Colorado's argument that the State of New Mexico can conserve water to offset a proposed diversion in Colorado was contrived. First, it was asserted that there is no water right

administration on the Vermejo River which might "promote beneficial use, eliminate waste, and conserve the water supply." Reply Brief of the State of Colorado, May 7, 1982, at 54. Secondly, Colorado asserted that an "uncontrolled multiplication of water detention dams, fishponds and stockwater ponds deprive the [Vermejo Conservancy] District of its full share of water" ¹⁷ *Id.* at 54. The theory is that the State of New Mexico should administer priorities, declare unspecified Vermejo rights forfeited or abandoned, and eliminate the stockponds in the Vermejo drainage. These "conservation measures," Colorado urged, will augment the water supply to facilitate C. F. & I.'s proposed use.

While Colorado never explained how administration could conserve water, the Master concluded that "[a]side from major projects which would improve the conservation of Vermejo River water, the most important element is administration."¹⁸ Report of May 31, 1983 at 18. The Master made no factual finding to support his conclusion.

In an attempt to denigrate New Mexico water law, Colorado argued that "New Mexico follows a practice of no surveillance of water usage unless . . . they receive complaints," while Colorado "maintains a constant surveillance during the irrigation season" Post Hearing Brief at 33. In all of the 18 arid or semi-arid western states the state water administrator, usually called the state engineer, is responsible for the administration and distribution of the waters of the state. *See, e.g.,* Colo. Rev. Stat. §37-80-102 (1973) and §72-2-9 (N.M.S.A. 1978). In all of these states except Colorado, however, an intending appropriator

¹⁷ The Court should note that Colorado inadvertently recognizes the historical shortage to the Vermejo Conservancy District in some of its arguments.

¹⁸ The "major projects" that should be undertaken in New Mexico are a figment of the Master's imagination. They aren't to be found in the record.

cannot acquire a usufruct in public waters until the State Engineer first finds that water is available to appropriate and then issues a permit. *See, e.g.*, §72-5-1 and §72-12-3 (N.M.S.A. 1978). The effect of these restrictions on new appropriations is twofold. They shift the burden of proof to the intending appropriator to show that his appropriation will not impair existing water rights and they tend to limit the new appropriations to the amount of water realistically available. By contrast, Colorado does not govern new appropriations, but rather allows unending rights to appropriate its streams and rivers. Tr. 604.

The proliferation of water rights in Colorado that has resulted from the absence of governmental control over new appropriations is illustrated by Colorado Exhibit No. 14-5 and the testimony of Dr. Danielson, the Colorado State Engineer, who stated that demand exceeds the supply on the Purgatoire 99.5% of the time. Tr. 534. Stated differently, "at least 50 percent of the time, [the Purgatoire] is overappropriated 800 percent." Tr. 537.

As explained by New Mexico's witnesses, there is ordinarily no need for constant governmental surveillance of water use in New Mexico. *E.g.*, Tr. 1063-64, 2416-17. While drought and shortage may make life difficult for water users, it is our experience that they can and do govern themselves. Tr. 2416-17. When administrative intervention is needed, however, New Mexico law is more than adequate.

Supervision of apportionment of water in accordance with licenses and court decrees is vested in the State Engineer. §72-2-9 (N.M.S.A. 1978). He may create or change water districts from time to time when necessary. §72-3-1 (N.M.S.A. 1978). Upon written application of a majority of water users in a water district, the State Engineer appoints a watermaster who has immediate charge over the

apportionment of water (under the general supervision of the Engineer) and he shall so apportion, regulate, and control the waters as to prevent waste. In the absence of such an application, the State Engineer may appoint a watermaster for either temporary or permanent service if local conditions require it. § 72-3-2 (N.M.S.A. 1978). The watermasters are to report such information to the State Engineer as he may require, such as the adequacy or inadequacy of the water supply, and the State Engineer shall correct any errors of apportionments as may be needed. §72-3-5 (N.M.S.A. 1978). During the existence of an emergency, and only during such time, he may employ assistants to serve under a watermaster. §72-3-4 (N.M.S.A. 1978). Any person may appeal from the acts, or decisions of a watermaster to the State Engineer and thence to the district court. §72-3-3 (N.M.S.A. 1978). 2 W. A. Hutchins, *Water Rights Laws in the Nineteen Western States*, 528 (1974).

Intervention in the form of a watermaster has not been needed on the Vermejo River. However, water rights administration by the State of New Mexico in many important respects has extended to the Vermejo since 1907. All appropriations of ground and surface water can be made only after application to the State Engineer and following statutory notice and hearing procedures. Similarly, all changes in point of diversion or place and purpose of use, like that undertaken by Kaiser Steel, can be effected only by application, notice and hearing. The State Engineer also supervises the construction of dam and reservoir structures and has undertaken and completed a program of water right adjudication in the area. Tr. 2417. More importantly, however, with regard to the priority administration that Colorado has represented would result in savings, Colorado put on no evidence to show how such administration could make water available for its proposed new use, and the Special Master

has made no corresponding finding that it would result in any savings. Factually, administration could not conserve Vermejo water, and priority administration would do nothing but confirm historical shortage. It makes no difference which of the New Mexico users take the short supply first; they are all senior to C. F. & I. by nearly 100 years.

On the Vermejo River, the first appropriator is the Vermejo Park Corporation. The lands irrigated are adjacent to the Vermejo River. There is no opportunity for waste because there are no swamps, seeped lands, or areas into which water could be diverted and wasted. Any water diverted and not consumed by the crops returns to the stream system as return flow. Any water not diverted by Vermejo Park under its priority and return flows from the corporation's diversions simply proceed downstream to the next diverter on the Vermejo. There is no conservation opportunity through administration.

The next user is Kaiser Steel Corporation which diverts from the Vermejo River and from York Canyon into a closed system. Meters are installed on both diversion points. Under its permit from the state, Kaiser must return a minimum of 25% of the diverted water through a metered point of return to the Vermejo system. Kaiser reports monthly to the State on its diversions and return flows. If Kaiser does not divert water from the Vermejo River in accordance with its priority, the water, along with Kaiser's return flows, proceeds downstream to the next diverter on the river. There is no opportunity for conservation through administration.

The third point of diversion is the Phelps Dodge Corporation. The lands irrigated by this diversion are adjacent to the river; water diverted and not consumed by the crops readily finds its way back to the river system as return flow. The only water loss results from seepage in the return flow channels to the river,

which returns to the stream. Any water not diverted in accordance with the Phelps Dodge priority, along with Phelps Dodge's return flows, proceeds downstream to the next diversion. There is no conservation opportunity through administration.

The last diversion on the river is Vermejo Canal which serves all of the remaining users, except the Canadian users who receive the flood flows. The Vermejo Canal diversion is operated by the Vermejo Conservancy District which employs a full-time staff whose duties include the diversion from the river, distribution and delivery of water to the individual water users in the District, as well as the operation and maintenance of the District's facilities. Deliveries of water are strictly prorated. The administration of the water diverted by the Vermejo Canal, which serves most of the users on the Vermejo River, is performed down to delivery to the users, which is much more administration than occurs in Colorado.

The private users' diversions from the Vermejo Canal are also monitored by the District. Mr. Pompeo and Mr. Odom, the two principal private users, have meters on their diversions. Tr. 1911, 1972. Any water not diverted by the five private users in accordance with their priority flows on down the canal to the District's supply. Any water not diverted from the Vermejo by the Vermejo Canal flows downstream into the Canadian River and into Conchas Reservoir which has a conservation storage capacity of 270,000 acre-feet to serve the Arch Hurley Conservancy District. In the event that Conchas Reservoir spills, Ute Reservoir, which is in the process of being enlarged to have a conservation capacity of 200,000 acre-feet, can capture and conserve the spill. These two Canadian River reservoirs provide the ultimate conservation measure for water spilling past the Vermejo Canal diversion. Accordingly, administration of priorities by the State of New Mexico would not conserve water or promote water use development.

Colorado also argued that New Mexico officials take no action under our forfeiture statute or our abandonment law until complaints are received and that "[t] his inaction is in the face of substantial evidence that rights on the Vermejo have been abandoned, as well as evidence of periods of nonuse." Post Hearing Brief at 34. As a matter of law, Colorado's assertion was nonsense. The "substantial evidence" of abandonment consisted of two documents, a memorandum from an employee of the Water Rights Division of the State Engineer Office to the State Engineer relating to the transfer from Eual Messick to Kaiser Steel of 230 acre-feet of water right (Colo. Ex. No. 49) and the complaint in *City Of Raton v. Vermejo Conservancy District*, No. 80-77 (D.C. Cty. Colfax 1980). Colo. Ex. No. 29.

Neither document indicates or remotely suggests an intent to abandon. The memorandum resulted from a routine field inspection of water rights proposed to be transferred. While the authors concluded that part of the rights appurtenant to the Messick land appeared to have been unused, the issue was subsequently tried before the State Engineer. See Application No. 10872, N.M. State Engineer Office, N.M. Ex.No. G-11. Evidence was adduced on the question, and it was found that the facts did not support the conclusion that rights had been forfeited. On appeal, the administrative decision was upheld. *W.S. Ranch Co. v. Kaiser Steel Corporation*, 79 N.M. 65, 439 P.2d 714 (1968).

The other half of Colorado's contention of forfeiture or abandonment in New Mexico consists of paragraph 8 of the complaint in *City of Raton v. Vermejo Conservancy District*, an action seeking a declaration that the District has no right to call priority on certain Chico Rico waters. The City of Raton allegation reads: "The defendant has abandoned and forfeited, through non-use, the right to call upon the plaintiff for the right for waters originating above the reservoirs belonging to the plaintiff." In other words, Colorado's substantial evidence is an

unsubstantiated allegation in a complaint. Since trial in this case, the *City of Raton* case was heard before the district court of Colfax County. In its Judgment of December 9, 1982, the district court held that the Vermejo Conservancy District was not barred or estopped from exercising its rights on the Chico Rico stream system by priority call or otherwise. The district court also awarded water to the District stored out of priority by Raton.

While there is thus *no* evidence of abandonment or forfeiture in the record, Colorado's briefs are replete with unsupported innuendo and scandalous suggestion that rights have been lost on the Vermejo. Contrasting Colorado's procedure to New Mexico's alleged inaction, Colorado asserts that "[Dr. Danielson's] office has recently declared some 650 water rights abandoned in the Arkansas River Basin, with 35 of these being in the Purgatoire River Basin." Post Hearing Brief at 34. The record shows that the Colorado State Engineer has no authority to "declare" water rights abandoned and that the list of which Dr. Danielson was speaking was not compiled until 1978 and is "yet to go to adjudication." Tr. 610; *see generally*, Tr. 562-65.

Contrary to Colorado's statement that 35 water rights have been abandoned on the Purgatoire, Dr. Danielson testified on cross-examination that "[a] water right can only be abandoned by the water court, and only after facts have been established and the intent proven that the right was really intended to be abandoned." Tr. 609. The evidence shows that the list to which Dr. Danielson referred was originally compiled in 1972, was revised in 1974, and was revised again in 1978. Tr. 611. As the record also shows, the nonuse occurring on the Vermejo since the early 1970s has been the result of drought conditions testified to by New Mexico's experts, Bureau of Reclamation officials, and each of the users on the river. *See* Points II and III. These conditions necessarily preclude a finding of intent to abandon

because they are beyond the control of the water users. Under the law of every western state, nonuse caused by shortage cannot be attributed to lack of diligence or an intent to abandon. See, e.g., *In re C. F. & I. Steel Corporation in Las Animas County*, 183 Colo. 135, 515 P.2d 456 (1973).

Stockponds

At the commencement of the trial of this case in December of 1980, Colorado introduced into evidence certain documents from the United States Bureau of Reclamation files. Colo. Ex. Nos. 37, 38, 40, 43, 44, 45, 58, each of which repeats or alludes to a single statement made by a Vermejo Conservancy District official to the effect that stockponds were depleting the District's supply and causing the shortage. Colorado argued that these documents establish that a primary cause of shortages of Vermejo River water in the Vermejo Conservancy District results from "unregulated" water detention dams.¹⁹ The depletion of Vermejo River water caused by these structures is variously described as "significant" and "major," although no specific amounts of water are ever stated in the exhibits or in Colorado's briefs. The location of these offending structures with respect to the District's diversion dam on the Vermejo is nowhere stated in any of the documents. It is assumed that structures are within the Vermejo watershed although the documents are silent as to this point also.

No attempt was made by Colorado to verify the statement contained in these exhibits. The number and location of the stockponds is not indicated in the exhibits, and the amount of water is nowhere quantified. Colorado did not independently present quantitative evidence on the number of stockponds or their effect on the Vermejo River.

¹⁹ Again, Colorado inadvertently recognizes the shortages that it maintains don't exist.

New Mexico objected during trial to Colorado's stockpond "evidence" because it was cumulative, unsubstantiated hearsay. Tr. 32. In light of Colorado's repeated misuse of the Bureau of Reclamation documents and pursuant to the Court's invitation to submit additional evidence, we moved the Master to receive new evidence which quantifies the stockpond depletions and places the documents in perspective. The Master refused to give New Mexico a hearing. Ignoring our tender of evidence, which contains the facts as opposed to the unsupported apprehension of a Vermejo Conservancy District official, the Master reached a number of unattested conclusions and offered a number of amorphous suggestions:

More careful administration in New Mexico might also alleviate some of the other problems causing water shortages or loss. One such problem is unregulated stockponds, fishponds and water detention structures. (Colo. Ex. No.s 38, 40). While there is no question that such water use is to a certain extent necessary and beneficial, some sort of restrictions should apply. The numbers of ponds and other structures might be limited; when appropriate, reuse should be developed; and, the extent of water diverted to these areas should be in some way monitored or controlled. There is some indication by New Mexico that approximately 2,024 stockponds exist in Colfax County. (Defendants' Brief on Remand, p. 53). Reduction and/or regulation of some type could not help but be an effort, however small, to conserve the water supply and put it to beneficial use. Report of May 31, 1983 at 18.

The facts would have sobered the Master's enthusiasm. New Mexico State Engineer Technical Report 44, Table 33, p. 21, shows the total evaporation from the 2,024 stockponds in Colfax County to be 2,124 acre-feet in 1980. The drainage area of the

Vermejo River above the Conservancy District diversion comprises 8% of the total area of Colfax County. It is conservative to assume that 8% of the stockponds is located in the Vermejo River drainage above the District's diversion because the drainage is more mountainous, has more live water, and fewer cattle are pastured per square mile than in the rolling prairie area of Colfax County. See Amended Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law, at. 2-4. Under such a conservative assumption, the total depletion of the Vermejo River in 1980 above the District's diversion as a result of stockponds would have been 170 acre-feet ($2,124 \times 8\%$).

The data upon which the figure of 2,124 acre-feet evaporation are based show a total of 2,024 stockponds in Colfax County.²⁰ Again employing the conservative assumption that they are spread uniformly throughout the county, there would be a total of 162 ponds in the Vermejo River drainage above the District's diversion dam. Using data on stockpond capacity from State Engineer Office hydrographic surveys in other areas of the state, New Mexico's expert, Mr. Mutz, estimated that the total effective capacity of the 162 ponds is 441 acre-feet. It should be emphasized that the ability of such capacity to deplete the Vermejo River is limited to the evaporation from the ponds as computed above, neglecting the minimal amount of water consumed by cattle and wildlife. Leakage and seepage from the stockponds return to the river system and do not deplete the river. It should also be emphasized that the use of water by stockponds is a beneficial use as the Master admits and necessary to provide water for cattle to effectively use the available grazing areas. The drainage area above the Vermejo diversion dam totals 317 square miles, which indicates a stockpond density of 0.50 per

²⁰ While rejecting New Mexico's evidence, the Master took the figure of 2,024 stockponds out of our tendered evidence and used it against us. See, Report of May 31, 1983 at 18.

square mile ($162 \div 317$). N.M. Ex.No. C-2. Such a density does not indicate a proliferation of stockponds. Further, this density is consistent with good ranch management practices to balance availability of forage and the distance cattle must travel to water. *See Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law*, at 2-4.

Following our initial estimation of stockpond depletion we undertook an actual hydrographic survey of all the stockponds in the Vermejo Conservancy District diversions. The survey was conducted by experienced surveyors under the direction of Eluid Martinez, a registered professional engineer and land surveyor and Chief of the Hydrographic Survey Section of the New Mexico State Engineer Office. *See Affidavit of Eluid L. Martinez*, at 1-2. All of the ponds in the Vermejo drainage were identified and located in the survey. A representative sample of the stockponds (31%) was surveyed in the field by planetable mapping to delineate maximum water surface area and depth of the ponds. Volume was also determined.

The facts are as follows: (1) there is a total of 80 stockponds in the entire Vermejo River drainage in New Mexico above the Vermejo Conservancy District's diversions; (2) there are no unadjudicated "fishponds" or unauthorized flood control structures in the Vermejo River drainage in New Mexico; (3) the aggregate capacity of all stockponds in service at maximum water surface level is calculated to be 212 acre-feet; and (4) while the actual depletion is less, the maximum annual depletion from all of the stockponds ranges from 182 to 192 acre-feet. *See generally*, *Affidavit of Eluid L. Martinez*, at 2-4.

These facts contrast with Colorado's exploitation of a single statement, repeated in a number of Bureau of Reclamation letters, expressing the unfounded fear of a former official of the Vermejo Conservancy District. Colorado's evidence has *no*

factual support in the record. The factual data we offered establishes unquestionably that there is no proliferation of unregulated stockponds in the Vermejo system and that the depletion from the existing ponds is insignificant.

While New Mexico believes that the Master's refusal to receive hard facts on the manufactured issue of stockpond depletion was discriminatory and denied us our right to a hearing, it remains that the Master made no specific findings. He concluded that "some sort" of restriction should apply, that limiting the number of stockponds and other structures "might" help, and rhetorically, that "regulation of some type could not help but be an effort . . . to conserve the water supply and put it to beneficial use."²¹ Report of May 31, 1983 at 18. If he had listened to the facts, he would have known that the Vermejo Conservancy District's water shortage has not been caused by stockponds. Even if there were a problem, however, the Master has neither quantified it nor offered a concrete and feasible way to resolve it. On the record, he couldn't have.

Conservation Measures in Colorado

The Court also requested specific findings of fact relating to the extent to which reasonable conservation measures in Colorado might eliminate waste and inefficiency in the use of water from the Vermejo River. In this regard the Court said that "it is appropriate to consider whether Colorado has undertaken reasonable steps to minimize the amount of diversion that will be required." 103 S. Ct. at 547. The Master disagrees. He feels "it is not for [him] or for New Mexico to say that reasonable attempts to conserve water will not be implemented by Colorado." Report of May 31, 1983 at 21.

²¹ Watering stock is a beneficial use in every state in the West, except, in the Master's mind, in New Mexico. Along with the Vermejo Conservancy District, the Master is recommending as well that the Court let our cattle industry die.

If the Master were to heed the Court's request, the conclusion he must reach is that Colorado has undertaken no steps to minimize the amount of diversion that will be required because C.F. & I. has no definite or even tentative construction design or plans and has prepared no economic analysis of its proposed diversion. Tr. 758-59. While C.F. & I. contemplates the construction of a reservoir in conjunction with the proposed diversion, no operational study of the proposed reservoir has been made. Tr. 766.

The Court has reiterated that equitable apportionment is a doctrine which requires " 'the exercise of an informed judgment on a consideration of many factors....' " 103 S. Ct. at 545, citing *Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945). One of the specific factors the Court is interested in being informed about in this case is whether Colorado has sought to minimize the amount of diversion that would be required by C.F. & I. The evidence shows that Colorado has not and thus has wholly failed to carry its burden in this regard. See 103 S. Ct. at 548, n. 13.

POINT V

**THE SPECIAL MASTER COULD NOT MAKE SPECIFIC
FINDINGS OF ULTIMATE USES OR BENEFITS TO
COLORADO AND THUS COULD NOT COMPARE
BENEFITS IN COLORADO WITH INJURY TO
NEW MEXICO.**

Few points of analysis exhibit the Special Master's failure to reasonably weigh the evidence so clearly as his treatment of the proposed uses of Vermejo water in Colorado. In its opinion of December 13, 1982, the Court created a standard for evaluating future uses and benefits in equitable apportionment litigation. The Court required the Special Master to make specific findings as to the "*precise nature* of the proposed intermin and ultimate use in Colorado of water from the Vermejo River, and the benefits that would result. . . ." 103 S. Ct. at 549 (emphasis added). According to the Court, Colorado had to provide "clear and convincing evidence" to support specific findings on this point. 103 S. Ct. 547-48, n. 13. Colorado failed to satisfy this standard. In his report, the Master acknowledges this expressly. Report of May 31, 1983 at 23. More importantly, he makes no findings showing the precise nature of the contemplated uses of Vermejo water in Colorado or any benefits therefrom that would outweigh injury to New Mexico. The Master's findings favoring Colorado's proposed uses demonstrate both the difficulties and the potential for abuse inherent in a standard which balances future uses against an existing economy.

The Master states that the uses to which this water would be put in Colorado cannot be determined: "there is no way for the Master or the Court to know . . . "how many of the uses would be developed to a final stage of operation." *Id.* He nevertheless holds that this "difficulty" cannot be allowed to prevent Colorado from receiving its "rightful supply" of water. *Id.* In

other words, although the evidence does not support the proposition that Colorado has determined its proposed uses with sufficient specificity to justify an award of water, the Special Master recommends an award of water nonetheless. In the Master's view, Colorado has a "rightful supply" of water that would transcend any facts or equities. *Id.* His report would enable Colorado to accomplish what the Court has sought to prevent — an award of water for undetermined future uses to which only speculative or unproved benefits could be attributed and by which the compelling equities inherent in an existing economy would be diminished.

To make use of Vermejo water, the C. F. & I. Steel Corporation must undertake a transmountain diversion from the Vermejo's tributaries into the Purgatoire River Valley. This is known as the "Ricardo Project." Tr. 657, 665. The evidence shows the feasibility of the project to be undetermined. The construction of a reservoir is contemplated at the junction of Sierra Blanca and Johnson Creeks to store water. Tr. 713-14. However, no engineering or financial feasibility study for such a reservoir has been made. Tr. 766. The costs of the Ricardo Project have never been fully analyzed. Tr. 758-59. No evidence was presented to show how the diversion facilities would be constructed. Tr. 760. No projected costs beyond a rough estimate several years ago have been made. Tr. 759.

Although the Special Master notes the interim and ultimate uses that Colorado discussed, the evidence shows these to be entirely speculative and uncertain. Colorado argued that the water would be initially used for interim agricultural purposes and subsequently for industrial uses. Colorado could not testify how long the interim use might or might not last. Tr. 765. The ultimate justification for the Ricardo Project would be the proposed industrial uses. Tr. 762. Two primary industrial uses

were mentioned: a coal washery and a synfuel project. Tr. 762. Other uses discussed include hydroelectric power, recreational, and domestic purposes. Tr. 730. None presently exists:

[Mr. Adkins] So in answer to your question, today at this moment, the situation is as I stated there, the coal washery does not exist, the sawmill operation is not on line today, and therefore, at this immediate moment, the only use would be agricultural. Tr. 785.

The status of the two projected industrial uses is highly questionable. The testimony showed that the coal washery would operate in conjunction with two mines — the Allen and Maxwell Mines. Tr. 714. However, the use of water for coal washing in connection with these mines would not exceed 400 acre-feet per annum. Tr. 761, Colo. Ex. No. 15 Revised, p. 24. In addition, the operational status of the Allen Mine is uncertain. Mr. Adkins, the C. F. & I. official with responsibility for the Ricardo Project, testified that the reserves from this mine were virtually exhausted and that the mine was nearing the end of its productivity. Tr. 714.

The use of Vermejo water for a synfuel project is also uncertain. The water requirements for this use have not been defined. Tr. 740. Mr. Adkins testified that he had "no way of knowing" how the water would be used for synfuel development. Tr. 762. C. F. & I. has not even determined the feasibility of a synfuel project. Colo. Ex. No. 13, p.5.

The other proposals are equally speculative. There is no currently existing use for the sawmill. Tr. 785. The same is true of the hydroelectric, recreational and domestic uses. Tr. 785. No analysis or engineering work for any power plant has been undertaken. Tr. 744. The domestic use is only a possibility. Tr. 747. No precise plans for any of these projects were submitted at trial. The record contains no firm cost estimates, no blue prints,

no plats, and no contracts for any of the ultimate uses. At most, the record reflects C. F. & I.'s ideas of several years ago. All that was shown was that a steel corporation wants to take water for some undefined use in the future. Tr. 712, 783, 795.

There is no credible evidence in the record to support economic benefit in Colorado from these diversions. In Colorado Exhibit No. 15 Revised, the benefits that C. F. & I. hopes to derive through construction of the Ricardo Project are summarized. The exhibit was authored by Mr. William Nelson, an urban planner. Tr. 812. Although the exhibit prepared by him purports to analyze economic factors involving comparative agricultural values, Mr. Nelson has never studied agricultural economics, and he agreed that the report could not be called an agricultural economic study. Tr. 812-13. The exhibit was an "impact study" which relied upon figures provided by C. F. & I. Tr. 822. The study expressly discounted the numerous economic factors associated with the projects mentioned by C. F. & I. and attributed all of the economic benefit solely to the presence of Vermejo water. Tr. 830, 832. Despite the presence of other factors to which part of the economic benefit must be attributed, e.g., the existence of the resource, labor, capital investment, and the economic climate, no other factors were analyzed. Tr. 2298. No effort was made to distinguish what portion of the benefit would be due to Vermejo water. Tr. 2298. The impact study thus distorts the role of the Vermejo and is analytically valueless in assessing benefits associated with the proposed use of Vermejo water by C. F. & I.

In short, Colorado's proposed uses are as speculative today as they were in 1975 when the District Court for Water Division No. 2 rejected C. F. & I.'s application in Case No. W-3961, because of the speculative nature of the proposed project. Tr. 731-32. In moving to reconsider on May 6, 1975, C. F. & I.

sought to minimize this consideration by arguing that "it is not required as a matter of law that specific needs or uses be shown" Motion for Reconsideration, Case No. W-3961. Notwithstanding C. F. & I's position, the Court imposed precisely this requirement on Colorado as part of its burden of proof. 103 S. Ct. 547-48, n. 13. It was not satisfied.

What is evident from the Master's discussion of this issue is the inherent speculation involved in balancing unproven benefits to Colorado against the existing economy in New Mexico. The Master's treatment of the evidence in this area and his attempt to balance indeterminate benefits to Colorado against the detriment to New Mexico demonstrates that the balancing of proposed uses with an existing economy on a fully appropriated stream is unworkable. As demonstrated by the Special Master, this balancing invites a comparison of something concrete with something speculative and amorphous. This problem was considered by Justices O'Connor and Powell in their opinion:

In equitable apportionment litigation between two prior appropriation States concerning the waters of a fully appropriated river, this Court has never undertaken that balancing task outside the concrete context of either two established economies in the competing States dependent upon the waters to be apportioned or of a proposed diversion in one State to satisfy a demonstrable need for a potable supply of drinking water. In the former context, the Court may assess the relative benefit and detriment by reference to the actual fruits of use of the waters in the respective States. In the latter context, the compelling nature of the proposed use reduces the speculation that might otherwise attend assessment of the benefits of a proposed diversion. Where, as here, however, no existing economy in Colorado depends on the waters of the Vermejo and the actual uses in New Mexico rank in equal

importance with the proposed uses in Colorado, the difficulty of arriving at the proper balance is especially great. 103 S. Ct. at 550-51.

These concerns are borne out by the Special Master's report. Colorado's proposed uses are entirely speculative, uncertain, and remote. No economic benefits can be determined from the record. The Master does not even attempt to make the specific findings of benefit to Colorado that the Court required. He states only that he has reviewed the evidence and finds that there will be "substantial" benefits because it is his "opinion" that Colorado's proposed uses are sufficiently weighty to allow an apportionment of water. Report of May 31, 1983 at 24.

The balancing attempted by the Special Master indicates a potential for abuse inherent in balancing existing equities against the speculation that accompanies a proposed future use. The existing economy has to live in the real world as opposed to the imagination. It is the existing economy which must contend with acute water shortage, refute allegations of wasteful or inefficient irrigation practices, and produce a ledger marked in black and red at the end of each year. The proposed use escapes such scrutiny. No yardstick of precision or feasibility was required by the Special Master in assessing C. F. & I's future use. This conflicts with the Court's affirmation that "the equities supporting the protection of existing economies will usually be compelling." 103 S. Ct. at 547. In addition, the Master's application of the Court's opinion would force a decision based upon the comparative quality and profitability of proposed uses as opposed to the equities arising from existing uses, a comparison made impossible by the fact that the future use need not justify itself with specificity. See 103 S. Ct. at 551.

This kind of balancing has never been undertaken in the past. In the first opinion in this case the majority referred to *Nebraska v. Wyoming*, 325 U. S. 589 (1945), in which an apportionment of the North Platte River was effected on behalf of an existing economy in Colorado based upon junior appropriations. The Court noted in that case that the rule of priority should not be strictly applied where it "would work more hardship" on the junior user "than it would bestow benefits" on the senior user. 325 U.S. at 619. The facts, however, reveal a fundamental difference in circumstances which shielded the Court from the conjecture inherent in balancing existing equities against a future use. In *Nebraska v. Wyoming*, *supra*, the balancing of benefit against injury was undertaken only when it was shown that the water involved would benefit the junior use but not the senior use. The Court said:

If a canal in North Park [Colorado] were closed to relieve the shortage of a senior appropriator in Nebraska, it would be highly speculative whether the water would reach the Nebraska appropriator in time or whether the closing of the Colorado canal would work more hardship there than it would bestow benefits in Nebraska. 325 U.S. at 619.

In other words, the balancing of benefit and hardship was a balancing between the complete loss of the water to the junior appropriators in Colorado and the likelihood that the benefits arising from the alternative use by the senior downstream users in Nebraska would not have been realized to any significant extent because the water would not have arrived in time or in sufficient quantity to have been of benefit. The principle articulated in the balancing of benefit and hardship in *Nebraska v. Wyoming* was not a judgmental balancing of the economic value of Nebraska's uses with Colorado's, but rather the

principle which underlies a futile priority call. That same principle is not present here.²²

In part this principle is based upon the Court's recognition that it is proper to weigh "the harms and benefits to competing states," as was done in *Kansas v. Colorado*, 206 U.S. 46(1907). There, the Court said: "we declined to grant any relief to Kansas on the grounds that the great benefit to Colorado outweighed the detriment to Kansas." 206 U.S. at 100-101. The principle discussed in *Kansas v. Colorado*, however, like the principle in *Nebraska v. Wyoming*, is not applicable here. The *Kansas* Court was not balancing speculative economic value with existing economic value in order to weigh the possibility of displacing the latter because the new use was "better." On the contrary, the Court was there addressing a profound practical problem that arose accidentally by virtue of conflicting exercises of sovereign power. The issue was whether the Court should countenance slight injury in Kansas in order to save two existing economies, not whether the Court could allow a new use in Colorado to the detriment of existing uses in Kansas. Here, a conflict of developed interests hasn't forced the issue.

In conclusion, the Master's attempt to balance benefit and detriment "highlights the restraint with which the Court should proceed in apportioning interstate waters between a State seeking a future use and a State with an existing economy dependent upon the waters to be apportioned." 103 S. Ct. at 551. In scrutinizing the existing uses, the Master was quick to find fault. In making the other half of his analysis, the Master could make no specific findings, but rather projected an idealized

²² Similarly, the facts in *Washington v. Oregon*, 297 U.S. 517 (1936), did not result in a judgmental balancing of comparative economic value, but rather the Court's determination that "[d]uring the period of water shortage, only a small quantity of water would go by if the dams should be removed." 297 U.S. at 522-523.

concept of the proposed future use. The Court could have no clearer demonstration of the difficulties inherent in the problematic balancing of existing equities with a future use.

POINT VI

THE MASTER'S RECOMMENDATIONS WOULD GUARANTEE INJURY TO ALL EXISTING USERS OF VERMEJO WATER IN NEW MEXICO, DEPRIVING NEW MEXICO OF NEARLY 4,000 ACRES OF IRRIGATED LAND.

Based upon his failure to assess the demand in relation to supply, his double standard of efficiency, and his view that reasonable — albeit unspecified — conservation measures are available to New Mexico and its water users, the Master concludes that “[t]he injury, if any, resulting from the Colorado diversion could be offset.” Report of May 31, 1983 at 29. In reaching this conclusion, which is demonstrably wrong, the Master is talking about the “injury, if any,” in excess of the loss which would derive from the Master’s mistaken conclusion that the acreage not irrigated in the 1970s was left fallow for lack of diligence. In other words, when the Master speaks of maintaining the *status quo*, he is talking about a *status quo* already reduced by 3,839.87 acres.

The acreage decreed, the acreage claimed, and acreage used by the Master to assess the demand are as follows:²³

²³ While the Master articulates his findings in regard to nonuse in terms of reduced acreage, he is not recommending that particular acreage be forfeited. Instead, in the guise of reduced acreage the Master is recommending that New Mexico’s legitimate demand be reduced by over one-third.

<u>Users</u>	<u>Decreed Acreage</u>	<u>Acreage Claimed by New Mexico to be Diligently Developed</u>	<u>Acreage Used by Master</u>
Vermejo Park	870.2	690	250
Kaiser	315	315	180.74
	(630a.f.) ²⁴	(630a.f.)	(361.47a.f.)
Phelps Dodge.....	301.19	250	150
Private users	477.81	477.81	312.1 ²⁵
Vermejo Conservancy District	<u>14,621.55</u>	<u>7,379</u>	<u>4,379</u>
	16,585.75	9,111.81	5,271.84

While the acreage decreed on the mainstem Vermejo is 16,585.75 acres, New Mexico is asking the Court to protect 9111.81 acres, with most of the difference deriving from the Bureau of Reclamation's determination of the acreage that could be supplied with water in the Vermejo Conservancy District after its works were rehabilitated. The Master, however, is recommending that the Court protect only 5,271.84 acres on the theory that the users in New Mexico should be blamed for the drought of the 1970s. In the Master's mind, this recommended, permanent reduction of acreage in New Mexico would not be injury, but rather is the starting point in his discussion of injury.

As fully explained in Points II and III, the Master's recommended reduction in acreage cannot be justified on the ground of lack of diligence and therefore is nothing more than a recommendation to injure. The water supply as shown by Table 2 in the Master's report, was short of demand as follows in the 1970s:

²⁴This is the quantity of water resulting from transfer of the tabulated acreage of irrigation rights to industrial use.

²⁵This figure includes a mistake made by the Master. He recognizes 88.4 acres for Mr. Messick when his right does not exceed 48.4 acres.

<u>Year</u>	<u>Supply at Dawson Gauge</u>	<u>Demand at Dawson Gauge</u>	<u>Shortage</u>
1970	13,030 a.f.	17,000	- 3,970
1971	5,660	17,000	-11,340
1972	4,680	17,000	-12,320
1973	12,920	17,000	- 4,080
1974	3,040	17,000	-13,960
1975	7,530	17,000	- 9,470
1976	6,640	17,000	-10,360
1977	7,900	17,000	- 9,100
1978	8,650	17,000	- 8,350
1979	12,570	17,000	- 4,430
	82,620	170,000	-87,380 ²⁶

The supply was short in each year, and the total shortage during the decade was 87,380 acre-feet.

It shouldn't take any citation to law to show that water rights are not subject to forfeiture for reasons beyond the control of the water users. *In re C. F. & I. Steel Corporation in Las Animas County*, 183 Colo. 135, 515 P.2d 456 (1973); *State of New Mexico ex rel. Reynolds v. South Springs Co.*, 80 N.M. 144, 452 P.2d 478 (1969); *Rocky Ford Irrig. Co. v. Kents Lake Reservoir Co.*, 104 Utah 202, 135 P.2d 108 (1943); *Federal Land Bank v. Morris*, 112 Mont. 445, 116 P.2d 1007 (1941); *Scherek v. Nichols*, 55 Wyo. 4, 95 P.2d 74 (1939); *Gould v. Maricopa Canal Co.*, 8 Ariz. 429, 76 P. 598 (1904). To deprive New Mexico's water users of their property rights because of an act of God simply is senseless.

²⁶ As explained in Point III, these figures contrast the actual annual supply with the actual annual demand at the Dawson gauge, taking into account water supplied by the Chico Rico and other minor sources.

The Master, however, is further persuaded that the New Mexico users in the Vermejo Conservancy District could have irrigated all of their water right acreage in the 1970s because of the District's reservoirs:

As noted earlier, the District has a reservoir system allowing carryover from wet years to supply water during periods of shortage. Therefore, the user most affected *does* have a means of offsetting the possible shortage. Report of May 31, 1983 at 27.

Again, the Master's logic is not very dependable. The total capacity of the District's six reservoirs is about 22,600 acre-feet as originally built. The total annual demand for water at the District's reservoirs to irrigate the 7,379 acres in the project is approximately 17,800 acre-feet. If the District's six reservoirs were filled to near capacity, that storage would provide a full water supply for only one year to the total project acreage, taking into account evaporation and seepage losses from the reservoirs. As the water shortage figures show, however, the water supply was short every year during the drought of the 1970s. The last year previous to the 1970s when the supply exceeded the demand and might have provided water for storage was 1965. See Point III at 40-41. That surplus, however, dissipated quickly. Just where the Master finds the water to carry over to or in the 1970s is a mystery.

Part of the Master's rationale is that the injury that would be caused in New Mexico doesn't really matter:

The injury, New Mexico fears, may even extend to the federal government, to whom the Vermejo Conservancy District owed in excess of two million dollars. However, such a state of affairs would be nothing new in this case. From the beginning the District has had problems making

their payments. (Tr. 168; Plaintiff's Ex. No. 38, Plaintiff's Ex. No. 6 at 9). Remedies from reduced payments to bills in the legislature relieving the District of payments altogether have been proposed. In this light, it hardly seems reasonable or accurate to blame the District's debt default on the proposed Colorado diversion. Report of May 31, 1983 at 27.

The first question is why not. With the reduction of 3,000 acres in the District for alleged lack of diligence in the 1970s, the United States can be assured that the debt will not be paid. Also, the Master doesn't appreciate Congress' obvious intent when it passed legislation temporarily relieving the repayment instead of permanently excusing it.²⁷

The same attitude underlies the Master's opinion of the Vermejo Project itself:

... [T]estimony leads to the conclusion that shortages resulting from [the] Colorado diversion... would be experienced in a project that has failed from the beginning to develop its allotted acreage, has failed to meet its financial obligations, and quite possibly should never have been built. Report of May 31, 1983 at 8.

The Master's intolerance, however, shows only his lack of familiarity with water supply conditions in general in the West and on the Vermejo in particular.

In the recent past, the water supply of the Vermejo River has not been what was anticipated in the early 1900s or even as late as the 1950s. This situation is not unique among western rivers. In 1922, the Colorado River Compact negotiators anticipated a

²⁷ It should be noted that the United States would be injured in another way, namely, by depriving the Maxwell National Wildlife Refuge of badly needed water. Tr. 2045.

flow at Lee Ferry well in excess of 15,000,000 acre-feet per year. That amount has not been realized in any long-term period that includes the flows occurring after 1945. The average annual virgin flow is now estimated at 14,000,000 acre-feet annually or less. The critical drought period of the Upper Colorado Basin extends through the year 1964. Other western rivers have critical drought periods extending into the 50s. The critical drought period of the Vermejo extends into the 70s. Ute Reservoir, which is located on the Canadian River, of which Vermejo is tributary, was estimated to provide a firm annual yield of about 44,000 acre-feet per year in studies made in the 1960s. With the drought of the 1970s, the yield of that reservoir through the critical drought period extending through 1978 has been reduced to 16,000 acre-feet per year. The record in this case shows that at the time the final planning report for the Vermejo Project was prepared by the Bureau of Reclamation in 1952, there was a water supply to irrigate 7,379 acres of the more than 14,000 acres decreed. *See* N.M. Ex. No. C-2. The project was rehabilitated accordingly. In the development of the water supply studies undertaken by the Bureau of Reclamation in 1952, the flow available at the Vermejo Canal diversion was estimated to be 19,800 acre-feet annually; of this amount only 12,700 acre-feet annually was available as inflow to the District's reservoirs. N.M. Ex. No. C-2, p. 41. In other words, 12,700 acre-feet annually from the Vermejo River were estimated to be available for the development of the 7,379 acres served by the project. However, the water supply declined abruptly in the early 1950s, recovered somewhat in the 1960s, and declined again in the 1970s. The average annual recorded discharge of the Vermejo River at Dawson was as follows:

1950-1959	10,000 acre-feet
1960-1969	11,500
1970-1979	8,300

See Colo. Ex. No. 5, Table 2.

Notwithstanding his reliance on long-term averages, the Master noted that the average annual flow of the Vermejo River near Dawson during the 1970s was 8,262 acre-feet. Report of May 31, 1983 at 11. When he conjectures that "even an average of 10,900 acre-feet at the Dawson gauge would seem to provide a fair amount of available water, and more than enough to supply the current uses below the gauge," he forgets that the average annual flow at the Dawson gauge for the 1970-79 period was only 8,262 acre-feet, much less than the 10,900 he prefers to use to assess shortage and diligence in the 1970s.

Aside from the Master's own figures in Table 2 of his Additional Factual Findings, New Mexico estimated the water supply available to the District for both the 1950-78 and 1955-79 periods. N.M. Ex. No. F-29. This study included the available water supply for the decreed acreage of Phelps Dodge Corporation and for the five private users diverting from the Vermejo Canal. It also included spills at the Vermejo Canal diversion, accretions to the flow below the Dawson gauge, and losses in the Vermejo Canal. It further demonstrates the lack of water to meet the demand. For example, in the five-year period 1950-54, the annual flow at the Dawson gauge ranged from a minimum of 1,300 acre-feet to a maximum of 6,400 acre-feet and averaged 4,300 acre-feet. During the same period the annual inflow to the Vermejo Conservancy District reservoirs ranged from 200 acre-feet to 4,600 acre-feet and averaged 2,700 acre-feet. The net depletions by Phelps Dodge Corporation and the five private users and losses in the Vermejo Canal account for the difference in flow between the Dawson gauge and the District's reservoirs. There were no spills. Shortages occurred to Phelps Dodge and the private users.

While the supply in the 1960s recovered somewhat, the accumulated deficit for that period was 54,890 acre-feet. See Point III at 41. Beginning with the year 1970, however, the river

again entered a period of deficient runoff that extended through 1978 except for the year 1973 in which the runoff was 118% of the average flow for the 1955-79 period, an insufficient amount to refill the District's reservoirs following the two successive dry years in 1971-72. N.M. Ex. No. F-24. During the period 1974-78, inclusive, recorded flow at the Dawson gauge ranged from 2,700 acre-feet to 8,700 acre-feet and averaged 6,700 acre-feet. In the same period, the inflow to the Vermejo Conservancy District reservoirs shown in N.M. Ex. No. F-29 ranged from 1,600 acre-feet to 7,100 acre-feet and averaged 5,200 acre-feet. The aggregate inflow was 25,900 acre-feet during the five year period, which is less than a two year supply.

The water supply figures show that the Vermejo was chronically short during the 1970s, the period which the Master used to reduce New Mexico's diligently developed entitlement by 3,840 acres. The Master's finding of lack of diligence is therefore unsupported and his recommended reduction is a recommendation that the Court order that New Mexico be injured. The Court's opinion rejects an apportionment of the Vermejo River that would result in unacceptable injury to New Mexico. The Court emphasized its intention to protect the economy that is dependent upon the Vermejo in New Mexico by stating that the equities supporting an existing economy "will usually be compelling." 103 S. Ct. at 547. While the Court acknowledged that the Special Master's recommendations were based upon a conclusion that the Vermejo Conservancy District was not economically feasible, this was not accepted. 103 S. Ct. at 514. The case was remanded to obtain factual findings for evaluating injury to New Mexico.

Beyond the hydrologic fact that the Master's recommendations would severely injure New Mexico, three considerations are relevant to this inquiry. They include the role of the Vermejo River in the economic life of Colfax County, the

value of the economic activities conducted by the primary beneficiaries of the use of Vermejo waters, and the contribution made by those beneficiaries to various secondary or indirect beneficiaries.

Colorado made no analysis of the Colfax County economy, of its dependence on the Vermejo River, or of the consequences of diversions of 4,000 acre-feet per year to New Mexico. Tr. 833-34, 842-44. New Mexico's economic witness, Dr. Lee Brown, undertook an extensive analysis of the economic importance of Vermejo River water to its current users, to Colfax County, and to the State of New Mexico. His objective was twofold. He sought to measure and evaluate the degree of economic dependence of existing water users upon the waters of the Vermejo, termed the primary beneficiaries, and the indirect benefits accruing to other entities, termed the indirect or secondary beneficiaries.

The principle method utilized in determining the economic reliance of New Mexico on the Vermejo was benefit analysis. Tr. 2258. The use of benefit analysis is designed to yield a determination of the economic benefits which are attributable to a particular source, in this case the Vermejo River, by apportioning economic gain or loss to the various factors associated with it. Tr. 2298. Such an analysis shows the benefits accruing to Vermejo water users directly and to other indirect or secondary beneficiaries. Tr. 2258-66, N.M. Ex. No. F-33, pp. 29-30. It allows for a separation of the benefits attributable to the Vermejo from those attributable to other sources, like capital investments or labor, and provides the basis for conclusions on the effect of Colorado's proposed diversion from the Vermejo tributaries.²⁸ Tr. 2257, 2259-61. Colorado made no such analysis.

²⁸ In standard economic practice the degree of economic dependence on a natural resource is measured by the *benefits* associated with the uses of that resource. Although no public water project is being planned for the Vermejo River, the concepts of economic benefit concerning the existing uses of water in the Vermejo are nevertheless identical to the measurement concepts contained

Dr. Brown's findings and conclusions are contained in New Mexico Exhibit No. F-33. The exhibit compares the activities conducted by the present day users of Vermejo water with the compensating actions that would be necessary without the water. The difference can be attributed to the availability and use of Vermejo water and expressed in economic terms. Tr. 2259-61, 2275-77. Dr. Brown was assisted by several economists including a team of agricultural and resource economists who extensively examined the water use made by the present-day users of Vermejo water in New Mexico as well as the secondary dependence of Colfax County and other entities upon the activities of the primary beneficiaries. Tr. 2262-67, 2274-77.

The rights of the primary beneficiaries are set out in Point II. The secondary or indirect beneficiaries are supported by the activities of the primary beneficiaries. Foremost among these is Colfax County. Tr. 2265-66. The economy of Colfax County is heavily influenced by the economic activities of the primary beneficiaries for employment and retail purchases and sales. Tr. 2265-66, 2274 N.M. Ex. No. F-33, pp. 41-50. Other secondary or indirect beneficiaries include the State of New Mexico, the federal government, and the State of Colorado.

By 1979, mining, agriculture, and retail trade were leading economic sectors of the Colfax County economy. N.M. Ex. No. F-33, p. 22. These industries include both primary and secondary beneficiaries from the Vermejo River. They are displayed on Table No. 7 of New Mexico Exhibit No. F-33 for the period 1973-1978.

in the federally approved methodology set forth in the documents. Senate Document 97, 87th Congress, 2d Session, Principles and Standards for Planning Water and Related Land Resources, and subsequent revisions. Just as federal benefit/cost criteria for a water development plan require that a comparison be made between "conditions expected with the plan to the conditions expected without the plan," so the benefits of Vermejo water in New Mexico require a comparison of existing conditions with expected conditions were the Vermejo water not available as it currently is. N.M. Ex. No. F-33, pp. 29-30.

The decade of the 1970s in Colfax County was a period of economic growth, due in large part to the development of the Kaiser mine.²⁹ Tr. 2271. This is attributable in part to economic activity associated with the Vermejo. There has been a 7.6% increase in the population of Colfax County since 1970. N.M. Ex. No. F-33, Tbl. 2-A, Tr. 2271. By 1979, the unemployment rate had declined to 5%, significantly below that of the State of New Mexico in general. Tr. 2271-72. Per capita income has risen.³⁰ Tr. 2272.

Approximately 17-20% of the irrigated acres in Colfax County is in the immediate vicinity of the Vermejo and rely upon Vermejo waters. Tr. 2273, N.M. Ex. No. F-33, p. 27. Other benefits of the use of Vermejo waters include employment and recreation. For example, Vermejo Park is a working and recreational ranch serving visitors from throughout the United States. Tr. 2274. Vermejo Park realized \$760,000 in revenues from hunting, fishing, and other recreational activities and \$300,000 in livestock revenues in 1979. N.M. Ex. No. F-33, pp. 31-33, Apps. A-1, A-2.

The most important single factor in the Colfax County economy is Kaiser Steel Corporation. Kaiser accounts for 9% of the employment of the county. Tr. 2273. Kaiser's sole operation is the York Canyon Mine which is dependent on the Vermejo for all of its coal mining activities. Kaiser employed 511 people in 1979 with a payroll of approximately \$1.62 million. N.M. Ex. No. F-33, p. 35. Kaiser made additional expenditures for capital

²⁹ The Master notes that the economic growth in Colfax County in the 1970s did "not appear to conform" to the fact of drought in the 1970s. Report of May 31, 1983 at 25. The Master neglects to advise the Court of New Mexico's evidence on the development of the Kaiser mine in the 1970s, to which this economic growth is attributable.

³⁰ Per capita income was \$6,385 in 1978, whereas for the state as a whole it was \$6,599 or 81% of the national average. Tr. 2272.

improvements, maintenance materials, and operating supplies. N.M. Ex. No. F-33, p. 35.

The Phelps Dodge property is currently leased by the C S Cattle Company which produces cattle, hay and pasture. C S produces between ten and twelve thousand bales of hay per annum of Vermejo watered lands and thus avoids expenditures of nearly \$4,800 annually. N.M. Ex. No. F-33, p. 36.

A diversion of 4,000 acre-feet per annum in Colorado would unquestionably exacerbate historical shortages in New Mexico. Analysis of injury on the Vermejo may be divided between Vermejo Park Corporation, Kaiser Steel Corporation, Phelps Dodge Corporation, the private appropriators served by the Vermejo Canal, the farmers of the Vermejo Conservancy District, and the Canadian River users. In the event of diversions of 4,000 acre-feet from the Vermejo tributaries in Colorado, there would be adverse hydrological impacts to all of New Mexico's water users, including those on the mainstem of the Canadian River. Mr. Mutz testified that the effect of this taking by C. F. & I. "can effect at least water users as far down stream as Ute Reservoir" on the Canadian River. Tr. 1382.

Aside from the permanent injury arising from the Master's recommended reduction in acreage, the effect on the direct flow users, *i.e.*, Vermejo Park, Kaiser Steel, Phelps Dodge, and the five private users, would be most severe during periods of low flow. Tr. 1263, 1323-24, 1330-31, 1379-80. During these periods Colorado could dry up the river above Vermejo Park. Tr. 1379-80. These users have no storage and no alternative water supply. Tr. 1380, 1183-84, N.M. Ex. No. F-18.

The analysis of the low flow conditions at the Dawson gauge presented in New Mexico Exhibit No. F-21 Revised indicated that if C. F. & I. had depleted the river by 5 cubic feet per second

during the months of April, June, and September of the years depicted in Exhibit F-21, shortages would have been experienced by Vermejo Park Corporation, Kaiser Steel, and Phelps Dodge. Tr. 1257. Based on an analysis of the recorded flow at the State line, as well as the Dawson flows, a diversion by C. F. & I. would have caused the river at Dawson to dry up in May, September and October of 1977. Tr. 1259-61.

The Vermejo Park Corporation would be the first user to experience shortages in low flow years. The record indicates that historical water shortages have forced Vermejo Park Corporation to concentrate its efforts on irrigating about 250 acres near the Corporation's ranch headquarters. Tr. 2084. If Colorado were awarded Vermejo water, inadequate flow in the river would force Vermejo Park to reduce diversions further as a result of priority calls by senior downstream water users.

The effect of C. F. & I.'s diversions on Vermejo Park and Kaiser Steel is also shown by New Mexico Exhibit No. F-30, which uses Colorado's own figures for water production from the tributaries. This exhibit demonstrates the effects on Vermejo Park and Kaiser of diversions in Colorado during individual months. Tr. 1260-61. For example, if in May of 1977 diversions of 340 acre-feet had been made in Colorado, increased shortages would have been experienced by both Vermejo Park and Kaiser. Similarly, had C. F. & I. taken 180 acre-feet in September 1977, the river at Dawson would have been dry. Tr. 1260. Neither Vermejo Park nor Kaiser can afford not to have water during the low flow periods. Tr. 1262. For Vermejo Park, this would reduce the yield of their crops to zero. For Kaiser, the lack of water would force the mine to cease operations. Tr. 1262. It is important to emphasize that Mr. Mutz's study gauged the effects on Vermejo users from an analysis of the monthly flow over a critical water supply period. He testified that no analysis of average annual flow could comprehend the effects of these diversions. Tr. 1262-63.

C. F. & I.'s diversions would materially increase shortages experienced by the Vermejo Conservancy District. Tr. 1311. Injury to the Vermejo Conservancy District would be especially severe during consecutive years of low flow. Evidence shows the effects on the District as a result of the low flow years of the 1970s. N.M. Ex. Nos. F-22, F-24, F-29, F-37. Although the District's demand is met in part by inflows from Chico Rico Creek, the District relies primarily on the Vermejo River, which produces about 70% of its water supply. Tr. 1303, 1319. The evidence shows that during a period of 54 consecutive months between 1945 and 1950, 67% of the District's flow was derived from the Vermejo. Tr. 1300-01. A diversion of 3,650 acre-feet by Colorado would have deprived the District of 33% of the farm delivery demand of 11,000 acre-feet during the 1950-1978 period. Tr. 1324. The average annual historical shortage during the 1950-1978 period was computed to be 6,350 acre-feet, or 57% of the farm delivery demand. N.M. Ex. No. F-37. The effect of a diversion by Colorado on the District would be disastrous. Tr. at 1324, 1381.

New Mexico users also testified to the effects on their properties of C. F. & I.'s proposed diversions. The opinions they expressed are the result of their personal experience irrigating from the Vermejo River.³¹

Mr. Charlesworth testified that Vermejo Park would be injured in several areas including impairment to cattle grazing

³¹ The following testimony represents the impact of Colorado's diversions as seen by New Mexico's witnesses, Bureau of Reclamation officials, and the water users themselves. Mr. Mutz, Tr. 1324-26; Mr. Charlesworth of Vermejo Park Corporation, Tr. 2090-92; Mr. Taylor of Kaiser Steel, Tr. 1732-32; Mr. Ochs of the Bureau of Reclamation, Tr. 1652-53; Mr. Odom, Tr. 2216-17; Mr. Pompeo, Tr. 2205; Mr. Knox of the Vermejo Conservancy District, Tr. 1837-38; Mr. Spencer of the Vermejo Conservancy District, Tr. 1964-65; Mr. Brock of the Maxwell National Wildlife Refuge, Tr. 2045, and the Regional Director of the Bureau of Reclamation, Mr. Weimer, Tr. 1547-70.

and fishing, and depreciated value of the land. Tr. 2090-91. Mr. Pompeo testified that his farm would be damaged by diversions in Colorado. Tr. 2205. Mr. Carl Odom testified that he did not believe that the result could be other than to lessen the supply of water available to his farm. Tr. 2217. He testified:

Well, a diversion of that much water and as dependent as we are on the Vermejo River because all of our cattle are dependent on the water from the Vermejo, livestock water there on the tract, as well as raising crops for the cattle, it is going to increase the cost of operation. Tr. 2216.

Mr. Taylor testified to the effects of C. F. & I.'s proposed diversions on Kaiser Steel. He said that there were two options: either to shut down the operations at the mine or to attempt to bring in water from the Cimarron River at a cost of \$12,000,000. Tr. 1732. Closing the mine would result in withdrawing \$14,500,000 annually in hourly wages and benefits from the economy. Tr. 1732.

The farmers of the Vermejo Conservancy District were equally explicit as to the injury that they would experience from C. F. & I.'s proposed diversions. Mr. Joe Kern of the Board of Directors testified that "it would be just a matter of time, we would all be out of business." Tr. 2026. Glenn Matthews testified that it was unlikely that the farmers could survive, as did Jack Spencer. Tr. 1998, 1965. Each believed that the proposed diversion would have a devastating impact on the community of Maxwell.

The result of diversions of 4,000 acre-feet in Colorado would be extensive economic and environmental injury to New Mexico. Economic injury would consist of immediate financial losses to primary beneficiaries. This would be accompanied by financial losses to the indirect or secondary beneficiaries. Environmental injury would occur with the destruction of the habitat necessary to support the Maxwell Wildlife Refuge.

The direct losses to four users are summarized in Table No. 12 of New Mexico Exhibit No. F-33. The hydrological evidence indicates that Vermejo Park risks the loss of its water supply in low flow years. Tr. 1260-63. An analysis of the value of Vermejo Park's water was supplied by officials of the corporation. Tr. 2277, N.M. Ex. No. F-33, p. 45. On that basis the gross annual economic loss in years of shortage was computed to be \$760,000 in lost revenues from hunting, fishing, and other recreational activities, and \$300,000 in livestock revenues due to the inability to irrigate and provide stockwater. N.M. Ex. No. F-33, pp. 31-32. In losses to indirect beneficiaries, there would be a reduction of approximately \$870,000 in salary disbursements to Colfax County and to vendors in New Mexico and Colorado. N.M. Ex. No. F-33, p. 32. The annual net loss to Vermejo Park in times of shortage would be \$190,000. Tr. 2279, N.M. Ex. No. F-33, p. 32.

As New Mexico's principal witness, Mr. Mutz, testified, the Vermejo Conservancy District is the most vulnerable. Colorado's diversions threaten the major part of its water supply. Tr. 1381. This would entail loss of the District's collective fixed assets because many of the reservoirs, ditches, and improvements would have little or no value if there were not water available to make them useful. N.M. Ex. No. F-33, p. 38.

The debt of \$2,066,057.95 owned by the District to the federal government as of June 30, 1979, would continue to be in default. N.M. Ex. No. F-33, p. 38. The value of the individual landholdings would be reduced by \$200 an acre. The farms would have little value without water. N.M. Ex. No. F-33, p. 39. In sum, the farmers of the District would be deprived of their property without compensation of any kind.

Because of its location within the Vermejo Conservancy District, there would necessarily be financial and environmental injury to the Maxwell Wildlife Refuge. New Mexico Exhibit No.

E-18 shows the impact of water shortage on the Refuge. During the water short years of 1976 and 1977 there was an "extreme" drop in the number of geese using the Refuge. Tr. 2044. In addition, the migratory duck population was reduced. Tr. 2044. The consequence of water shortage induced by Colorado's diversions would perpetuate conditions of shortage for the Refuge and depredate the surrounding habitat. Mr. Brock testified:

If there is a further reduction in water supply it could hurt us two ways.

Number 1, if the amount of water that is available for irrigation is reduced, that will reduce our farming acreage which in turn is going to directly affect the water fowl populations. And also the wildlife in the area are dependent upon the lakes for surface water. And a large reduction in the surface water will also affect them adversely.

Q. Would it be your opinion, Mr. Brock, that a further reduction in water supply would directly undermine the purpose of the Maxwell Wildlife Refuge?

A. Yes, it would. Tr. 2045.

Loss of Vermejo water would also result in the reduction or elimination of the economic value of the facilities and equipment of the Refuge, the replacement value of which is \$1,749,000. N.M. Ex. No. F-33, p. 39. Loss in annual benefits of \$76,000 would result from the cessation of funds provided by Congress to preserve the recreational nature of the Refuge. N.M. Ex. No. F-33, p. 39.

A great dilemma caused by Colorado's diversions would fall on Kaiser Steel. The evidence shows that Colorado's diversions

would render Kaiser's water supply uncertain and could frequently dry it up. Tr. 1260-62. As a result, Kaiser would be faced with two options — to pipe water from the Cimarron River or to close the York Canyon Mine. Tr. 2280, 2282. Under the first alternative, the capital cost of transporting water from the Cimarron River was estimated at \$12,000,000. Tr. 1732. Amortizing this investment would result in additional yearly expenditures or lost profits of \$1,521,000 to \$1,770,000. Tr. 2281, 2295. The other alternative would be to cease operations. Mr. Taylor testified that closure of the mine for one year would result in losses of \$14,500,000 in hourly wages and benefits in New Mexico. Tr. 1732. An additional \$3,700,000 in supervision and wages would be lost. Tr. 1732. In 1980, Kaiser had capital improvements and purchases of maintenance materials totalling \$1,100,000. Tr. 1733. These would not be made.

The methodology used by Dr. Brown and his associates to measure the economic injury to indirect beneficiaries consisted of two approaches: an economic base approach and an input-output approach. Tr. 2289-92. Both approaches are designed to measure the "base jobs" directly dependent upon the use of the Vermejo by direct beneficiaries and to calculate the effect of subtracting those jobs upon others dependent upon them. Tr. 2290-91. The use of these methodologies resulted in computing a loss of between 139 and 153 jobs to the Colfax County economy. Tr. 2296. There would be additional injury to the Colfax County economy. Tr. 2289, 2296. The State of New Mexico would lose \$1,000,000 in severance tax paid by Kaiser Steel. Tr. 2289. There would be a decline in property values and property tax revenues. Tr. 2295. As indicated above, there would be losses in the contributions made by Vermejo Park and Kaiser Steel to various secondary or indirect beneficiaries, particularly in Colfax County.

Colorado made no analysis of the effect of diversions from the Vermejo tributaries on New Mexico. Dr. Brown, however, analyzed the effect of Colorado's diversions on New Mexico with the "impact" methodology in Colorado Exhibit No. 15 Revised. Dr. Brown did what the Colorado exhibit did. He attributed all of the economic benefits to the primary beneficiaries directly to the Vermejo. Tr. 2298. The result was that the loss of water to the primary beneficiaries who are the appropriators themselves would be 600 lost jobs. Tr. 2299. When jobs that rely indirectly on the primary beneficiaries are included this would amount to a loss of 1867 to 1885 jobs. Tr. 2299, 2300. This consists of 31% of the jobs in Colfax County, which constitutes 40% of the total personal income of the County. Tr. 2299, 2300. Under this analysis, there would be losses of \$2,000,000 to \$3,000,000 annually in tax revenues. Tr. 2300-01.

In concluding his discussion of injury in his Additional Factual Findings, the Master does not discuss the existing economy in New Mexico because he believes the water supply is sufficient to sustain the "current," albeit severely reduced, uses:

New Mexico represents an impressive array of figures allegedly representing the economic injury resulting from reduced water supply. However, for the most part these figures presuppose that no Vermejo River water is available for New Mexico users, and such is not the case even if New Mexico does not implement any additional conservation measures. Report of May 31, 1983 at 27.

The Master has not described to New Mexico or the Court a single specific conservation measure available to New Mexico, much less discussed its financial and engineering feasibility. It is true that the economic injury described by New Mexico depends upon a reduced water supply, but the Master would guarantee

that there would be no water supply for 3,840 acres of New Mexico's reasonable entitlement of 9,111 acres. The record also shows that there would be additional injury in both low flow and high flow years. What the injury would be precisely would depend on nature. The Court can be assured, however, that the injury would be substantial.

POINT VII

AN EQUITABLE APPORTIONMENT BASED UPON AUGMENTATION OF SUPPLY PROVIDES NO BASIS UPON WHICH TO REARRANGE PRIORITIES INTERSTATE.

In *Colorado v. New Mexico*, 103 S. Ct. 539 (1982), the Court discussed certain factors it deems appropriate in determining whether to apply the guiding principle of priority of appropriation or to depart from it. Three factors can be gleaned from the Court's discussion: (1) whether, consistent with historical water shortage, the rights sought to be protected have been utilized diligently and in good faith; (2) whether reasonable conservation measures are available to "offset" the proposed Colorado diversion; and (3) whether the cessation of any waste or inefficiency would effectively augment the water supply.

While the Master has neither properly weighed the evidence nor made specific findings in his consideration of these factors, he reached his conclusions — albeit erroneous — on the basis of his view that the proposed diversion in Colorado could be made possible through strict conservation measures which would "offset" it, *i.e.*, augment the existing supply in an amount sufficient to facilitate making the new use.

The factors discussed by the Court and considered by the Master are factors which might make water available for a new junior appropriation. They are not factors which might warrant a

restructuring of priorities interstate, assuming the water were thus made available. In making his recommendation of an award to Colorado, however, the Master has suggested to the Court that C. F. & I be awarded the first priority on the Vermejo River.

In the circumstance presented in this case, *i.e.*, a proposed new use on an admittedly fully appropriated river, there is no justification in law, logic, or equity for awarding an apportionment on the basis of an augmented water supply and simultaneously awarding the first priority to the new use. *Arizona v. California*, 373 U.S. 546 (1963); *Wyoming v. Colorado*, 259 U.S. 419 (1922); *Nebraska v. Wyoming*, 325 U.S. 589 (1945). The Master has recommended doing so without the slightest bit of explanation for his recommendation.

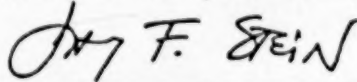
While the Court can equitably apportion interstate water for a new use upon the consideration of factors which might augment the supply, this would not provide reason to depart from priority of appropriation. If the Master's recommended apportionment were to be adopted notwithstanding its total lack of factual support, the Court must not, as the Master would, subvert the security of the existing property rights in New Mexico as an afterthought.

CONCLUSION

In its absence of specific findings to support an apportionment of the Vermejo, the Master's report reflects his continued reliance on the rejected view that Colorado is entitled to Vermejo water because some of its waters rise within Colorado. Report of May 31, 1983 at 23,29. The Court expressly disallowed this as a basis of decision. 103 S. Ct. at 544, n.8. Colorado has failed to provide the Special Master with the evidence on which to base specific findings and thus has failed to sustain the burden of proving that Colorado's claims are of "serious magnitude" or that its case is proved by "clear and convincing evidence."

In his analysis of each of the five points on which the Court requested a detailed factual analysis, the Master's report is replete with error and unproven assumptions. On the issues of New Mexico's existing uses, the hydrology of the Vermejo River, and injury to New Mexico, the Master has failed to examine the facts and to report them to the Court. The Master's recommendation that Colorado should be awarded 4,000 acre-feet should be rejected and the case should be dismissed.

Respectfully submitted,
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CERTIFICATE OF SERVICE

I, Jay F. Stein, hereby certify that I am a member of the bar of this Court and that on August 11, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be mailed the requisite number of copies of the foregoing Exceptions and Brief in Support of Exceptions, by first class mail, postage prepaid, to the following officials of the State of Colorado:

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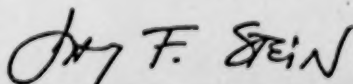
I certify that on August 11, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be served by express mail, postage prepaid, the requisite number of copies of the foregoing Exceptions and Brief in Support of Exceptions on the following counsel of record:

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I certify that all parties required to be served have been served.



Jay F. Stein
Special Assistant Attorney General

**In the
Supreme Court of the United States**

October Term, 1977

No. 80, Original

FILED

SEP 23 1983

ALEXANDER L. STEVAS,
CLERK

HONORABLE EWING T. KERR, SPECIAL MASTER

**THE STATE OF COLORADO,
Plaintiff,**

v.

**THE STATE OF NEW MEXICO,
AND PAUL G. BARDACKE,
ATTORNEY GENERAL OF THE
STATE OF NEW MEXICO,
Defendants.**

**COLORADO'S BRIEF IN REPLY TO THE
EXCEPTIONS AND BRIEF OF THE
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September 22, 1983

**In the
Supreme Court of the United States**

October Term, 1977

No. 80, Original

HONORABLE EWING T. KERR, SPECIAL MASTER

THE STATE OF COLORADO,

Plaintiff,

v.

**THE STATE OF NEW MEXICO,
AND PAUL G. BARDACKE,
ATTORNEY GENERAL OF THE
STATE OF NEW MEXICO,**

Defendants.

**COLORADO'S BRIEF IN REPLY TO THE
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INTRODUCTION

The Report of the Special Master on the equitable apportionment of the Vermejo River was entered December 31, 1981 (hereinafter Report). The Report was made after a lengthy trial in which both states were permitted full and wide-ranging presentations of evidence and cross-examination. At trial, the Special Master was liberal in allowing a full development of the facts, consonant with this Court's policy of comprehensive fact finding in actions within its original jurisdiction. See *New York v. New Jersey*, 249 U.S. 202 (1919); *United States v. Wyoming*, 331 U.S. 440 (1947). After carefully evaluating the reliability of the evidence presented and the credibility of the witnesses, the Special Master, an experienced trial judge, concluded that a diversion of up to 4,000 acre feet per year by Colorado would not materially affect existing New Mexico water users (Report, pp. 22-24). In reaching his recommendation the Special Master considered many relevant factors including conservation by the existing users in New Mexico and the balance of harm to New Mexico and benefits to Colorado.

New Mexico filed exceptions to the Special Master's Report. In its exceptions New Mexico argued that the doctrine of prior appropriation should be applied interstate to deprive Colorado of any use of water from the Vermejo River. New Mexico Exceptions to the Report of the Special Master and Brief in Support Thereof, April 7, 1982, at 5-9. Colorado argued instead that, while priority of appropriation was important, equitable apportionment called for the consideration of many other factors. Reply Brief of Colorado, May 7, 1982, at 16-32. In its opinion the Court rejected the interpretation of the law of equitable apportionment advanced by New Mexico. *Colorado v. New Mexico*, ___ U.S. ___, 103 S. Ct. 539, 545 (1982). Instead, the Court held that equitable apportionment is a flexible doctrine, which calls for the exercise of an informed judgment on a consideration of

many factors to secure a just and equitable allocation. *Id.*, at 545. The Court stressed that all relevant factors must be considered because the aim is always to secure a just and equitable apportionment without quibbling over formulas. See *New Jersey v. New York*, 283 U.S. 336 (1931). However, because the Special Master had not fully delineated the factual findings supporting his recommendations, the Court remanded for specific findings on five issues. *Colorado v. New Mexico*, 103 S. Ct. at 548-549. In so doing, the Court noted that additional hearings may be unnecessary in light of the extensive evidence already presented at trial. *Id.*, at 549, n. 14.

On December 20, 1982, the Special Master ordered the parties to submit briefs covering in narrative form the evidence and testimony previously presented involving the five items enumerated by the Court. He also ordered that additional evidence was not required. On March 5, 1983, New Mexico filed its Brief on Remand and a Motion to Receive Evidence. Its Brief on Remand contained much of the substance of the additional evidence it sought to present. Colorado opposed¹ the Motion to Receive Evidence on the grounds that the existing record adequately covered the issues raised by New Mexico and that the proposed additional evidence would be merely cumulative or irrelevant. The Special Master denied New Mexico's motion.

On May 13, 1983, New Mexico made an offer of proof in the form of a Narrative Tender of Evidence and Requested Findings of Fact and Conclusions of Law.² At that time, New Mexico renewed its request to receive

¹New Mexico characterizes this opposition as strenuous and vehement. It was neither, but merely pointed out the cumulative or irrelevant nature of the evidence New Mexico sought to present. Moreover, Colorado specifically reserved the right to put on additional evidence of its own if the record were reopened.

²New Mexico filed an Amended Narrative Tender of Evidence on June 17, 1983.

additional evidence. The Special Master entered his Additional Factual Findings on May 31, 1983, mooted New Mexico's renewed request. In the Additional Factual Findings (hereinafter Additional Findings) the Special Master, having carefully considered the evidence, re-affirmed his original recommendation that Colorado be awarded 4,000 acre feet per year.

SUMMARY OF THE ARGUMENT

Colorado's equitable entitlement to 4,000 acre feet annually from the Vermejo River has been recognized by the Special Master in accordance with the law of equitable apportionment announced by this Court. Upon a review of the lengthy and complete record in this case, the Special Master has provided the Court with an accurate description of the situation on the Vermejo River. He properly found that in New Mexico "the existing users of Vermejo water have not diligently and efficiently developed uses which would justify their need to retain their full decreed irrigation or water rights." The failure by New Mexico's users to fully develop their decreed rights is attributable to their conscious choice and is not due to current or historical shortages in the available water supply.

Available to New Mexico are numerous reasonable conservation measures which can enhance and conserve the available supply of water from the Vermejo River, most notably water administration. As the Special Master repeatedly noted, those reasonable conservation measures can be instituted by New Mexico and "increase its available supply of water to a point where the Colorado diversion might not have any impact at all." That conclusion is supported by clear and convincing evidence and shows that New Mexico is using more than its equitable share of the River. In particular, a single conservation measure — the closed stock and domestic water system — recently implemented by New Mexico has already provided it the ability to completely offset the effects of a Colorado diversion through elimination of a 98% wasteful use.

The benefits to Colorado from the recommended equitable apportionment of the Vermejo River will be significant. Colorado has established by clear and convincing evidence that the benefits of its diversion of 4,000 acre feet annually from the Vermejo River will substantially outweigh the harm, if any, to New Mexico resulting from that diversion. Colorado has also established that its diversion will be efficient and its uses are designed to eliminate inefficiency and conserve the common supply. The recommendations of the Special Master have achieved an equitable apportionment of the Vermejo River between Colorado and New Mexico.

I. THE SPECIAL MASTER CORRECTLY DETERMINED THAT ADDITIONAL HEARINGS WERE UNNECESSARY.

When filing its Brief on Remand, New Mexico sought leave to present additional evidence on the spills of water past the Vermejo Conservancy District (hereinafter District) headgate, on the depletions to the Vermejo River caused by stockponds and on the completion of a closed stock and domestic water system by the District. New Mexico's Brief on Remand contained extensive argument based on much of the additional evidence it sought to present (New Mexico Brief on Remand, pp. 43-45, 52-53). Thereafter, the Special Master denied the request to present additional evidence and New Mexico has alleged that this was error. It claims that exclusion of this evidence has denied representation to interests on the Canadian River and resulted in a report "... warped by inaccuracies." New Mexico Brief in Support of Exceptions at 10 (hereinafter N.M. Brief, p. ____). New Mexico's claims are exaggerated and incorrect.

A. The existing record adequately establishes the failure of the Vermejo Conservancy District to divert all the water from the Vermejo River to which it was legally entitled.

New Mexico's proposed additional evidence on spills past the District headgate and claimed contributions to the Canadian River consisted of proposed Exhibits F-56

and F-57 and the affidavit of Philip B. Mutz. New Mexico sought to use this data to quantify the volume of flood flows which spilled past the District diversion point in 1981 and 1982 and allegedly traveled downstream to the Canadian River. With this evidence it sought to bolster its claim that Colorado's diversion would injure water users on the Canadian River. This evidence is merely cumulative of the mass of evidence on this topic already in the record (N.M. Ex. F-29; Colo. Ex. 66) and the Special Master properly used his discretion in refusing to hold additional hearings. *Colorado v. New Mexico*, 103 S. Ct. at 549, n. 14.

During the course of trial the Special Master, over objections on the ground of relevancy, allowed New Mexico to present detailed testimony and introduce numerous exhibits regarding the alleged dependence of Canadian River water users on water spilled by the District. See e.g., Transcript pp. 1058-1060, 1383-1384 (hereinafter Tr. —). As a result, the record contains detailed testimony identifying the water users on the Canadian River and the relevant documents evidencing their entitlement to store and use water. See e.g., Testimony of Bradley Compton, Engineer and Assistant Chief of Water Rights Bureau, State of New Mexico, Tr. 1040-1056; Testimony of L. C. Strawn, Vice President, Board of Directors of the Arch Hurley Water Conservancy District, New Mexico, Tr. 2218-2238; N.M. Exs. G-3, G-4, G-5, G-6, G-7, G-8, G-10, G-15, G-28, G-30, G-31. The record also contains very detailed testimony and exhibits on the frequency and magnitude of spills past the District headgate for the years 1950 through 1979 and the injury alleged to result from a Colorado diversion. See e.g., Testimony of Philip B. Mutz, Chief Engineer, New Mexico Interstate Stream Commission, Tr. 1364-1385, 1412, 1419, 1426-1429; N.M. Exs. C-2, C-3, D-1, D-5, F-25, F-26, F-29, F-31, F-32 and F-48. Finally, the record contains a detailed discussion of the historical water supply and usages of the Canadian water users. See e.g., Tr. 1364-1385, 1412, 1419, 1426-1429, 2218-2238; N.M. Exs. C-3, F-25, F-26, F-31.

This evidence is highly revealing. First it showed that the District is entitled to divert all the flows of the Vermejo at its point of diversion and no priorities on the Canadian are entitled to demand that water be permitted to pass this diversion. *Accord, Colorado v. New Mexico*, 103 S. Ct. at 543. (Colo. Ex. 19, p. 29; Tr. 1112; Knox Deposition, pp. 34, 35, 40, 41.) It showed that spills past the headgate result from flash floods and from the clogging of the District headgate with silt and debris (Colo. Exs. 38, 40, 43). These flash floods have relatively large peak flows with not much volume (Tr. 1243). Measurable spills occurred in only six years of the thirty-year period of 1950 through 1979 (N.M. Ex. F-29). The total quantity of all spills during this period was only 6,900 acre feet, and the quantity exceeded 300 acre feet in only two years (N.M. Ex. F-29).

The evidence presented at trial also showed that these flood flows do not generally originate in Colorado and therefore could not be diverted by Colorado³ (Tr. 1227-1228, 1232-1244). Moreover, that evidence showed that there are nearly 155 river miles between the District headgate and Conchas Reservoir (Tr. 1426). New Mexico itself has concluded that upstream capture and use of these Vermejo River flood flows will have little effect on Canadian water users (Tr. 1075; N.M. Ex. G-10 2nd part). Thus, the tendered evidence on spills at the District headgate is cumulative, has little relevance to this case and has no bearing on the equities.

Due to the completeness of the existing record, New Mexico users on the Canadian River were certainly not deprived of representation nor was the Master's report "warped by inaccuracies." The Special Master considered the detailed evidence presented at trial and properly concluded in his Report that: "The Vermejo is virtually a closed system. Most of the water is consumed by various users and little, if any, of the water of the

³See detailed discussion on pp. 23-26, *infra*.

Vermejo reaches the Canadian River." (Report, p. 2.) And, "The effect of a diversion in Colorado on those who live below the Vermejo Conservancy District would be negligible and virtually non-existent." (Report, p. 4.)

B. Stockpond depletions.

New Mexico claims that the Special Master erred by not receiving additional evidence on depletions to the Vermejo River caused by stockponds and other water detention structures. It asserts that the failure to receive this evidence caused the Special Master to "repeat his earlier ruling, citing New Mexico's 'unregulated stockponds, fishponds and water detention structures' as a cause of waste on the river." (N.M. Brief, p. 11.) It also claims that had the Special Master received additional evidence he would not have made "inaccurate findings of water shortages caused by waste in 'unregulated stockponds, fishponds and water detention structures.'" (N.M. Brief, p. 13.) New Mexico misrepresents the Additional Findings of the Special Master.

On remand, Colcrado had suggested that stockponds and similar detention structures on the Vermejo River may have depleted the stream flow by some 2,000 acre feet per year. In his careful review of the evidence on available water supply, the Special Master considered this claim and rejected it as a questionable quantification difficult to depend upon (Additional Findings, pp. 10-11). Instead, based on New Mexico's Brief on Remand, the Special Master acknowledged the existence of some 2,024 stockponds in Colfax County, New Mexico. *Id.*, p. 18.⁴ He found that such water use was, to a certain extent, both necessary and beneficial. *Id.* However, he also recognized that the unregulated construction of these structures was one source of the water shortages

⁴New Mexico's Amended Narrative Tender of Evidence attempted to quantify only stockpond depletions to the Vermejo River, ignoring all such depletions to the Chico Rico drainage, a major source of supply to the Vermejo Conservancy District (Additional Findings, pp. 8-9; Tr. 229; Colo. Ex. 40).

being experienced by the District, a fact widely recognized by local and federal officials alike. *Id.* (Colo. Exs. 37, 38, 40 and 45.) On this basis the Special Master suggested that regulation of these stockponds "could not help but be an effort, *however small*, to conserve the water supply and put it to beneficial use." (Emphasis supplied), *Id.*

Nowhere did the Special Master make the "inaccurate findings of water shortages by waste" as alleged by New Mexico (N.M. Brief, p. 13). Rather, the Special Master to a large extent adopted New Mexico's positions and did not place a major reliance on reducing stockpond depletions as a reasonable conservation measure. Therefore, New Mexico has not been prejudiced by the decision of the Special Master not to receive additional evidence on stockpond depletions.

C. Closed stockwater system.

New Mexico also claims that the Special Master erred by not receiving additional evidence on the completion of the closed stock and domestic water system by the District. The only new evidence New Mexico sought to offer was the fact of its completion, the method of financing and completion of a water right transfer. The remainder of the evidence tendered by New Mexico was a reiteration of the efforts of the District to construct the closed system. Exhaustive evidence on this matter is already in the record and has been discussed at great length in the briefs before this Court. *See* Reply Brief of State of Colorado, May 7, 1982, pp. 50-53. (Tr. 1909-1910, 2761-2774; N.M. Ex. E-3.) In his Additional Findings the Special Master considered as true the evidence of completion of the closed system (Additional Findings, p. 20). Thus, the Special Master relied on the relevant portions of that evidence and New Mexico was not prejudiced by the Special Master's decision not to receive the remaining cumulative portions of the evidence.

II. THE SPECIAL MASTER CORRECTLY CONCLUDED THAT THE FAILURE OF USERS OF VERMEJO RIVER WATER TO DEVELOP THEIR USES IS DUE TO LACK OF DILIGENCE AND DOES NOT REFLECT CURRENT OR HISTORICAL WATER SHORTAGES.

After considering all the evidence on the existing uses of water from the Vermejo River,⁵ the current and historical use of water and whether existing uses have been developed with diligence, the Special Master made findings as to whether the failure by each New Mexico user to develop water rights was due to a lack of diligence or due to a current or historical shortage of water. The Special Master found that the existing levels of use reflect the conscious choice of those users and are not the result of current or historical water shortages (Additional Findings, pp. 3-9).

A. Vermejo Park Corporation.

The first New Mexico user on the Vermejo below the Colorado state line is the Vermejo Park Corporation (hereinafter Vermejo Park). Its diversion works are the farthest upstream on the Vermejo River in New Mexico and enjoy the second priority on the River (Colo. Ex. 25). The Special Master found that it had decreed rights to irrigate approximately 870 acres but had only irrigated

⁵With regard to uses of Vermejo River water, New Mexico asserts that: "Colorado's evidentiary analysis began in 1973" citing the testimony of Colorado's chief witness, Mr. Duane Helton (N.M. Brief, p. 19). Mr. Helton, at that point, was simply referring to information he had obtained from one source regarding Vermejo Park, which information did not predate 1973. However, in preparing his report and in giving his testimony, Mr. Helton analyzed the entire history of the Vermejo River as shown through records or otherwise (Colo. Exs. 5, 6). Moreover, it was Colorado that presented the evidence of the recorded flows of the Vermejo River at the Dawson gauge commencing in the year 1916.

New Mexico's unfounded assertion that Colorado's analysis began in 1973 is incredibly attributed to the Special Master as well. In its Exceptions, New Mexico states: "The Master's analysis began in 1973" (N.M. Brief, p. 3). This of course is belied by the thorough historical analysis contained in the Special Master's Additional Findings and the appendix thereto.

between 200-250 acres (Additional Findings, p. 3; *see also* Tr. 2059-2080). The Special Master concluded that Vermejo Park's failure to use its full decreed water rights was not based on current or historical water shortages but rather on lack of diligent development and perhaps lack of need (Additional Findings, p. 4; Colo. Ex. 68).

New Mexico asserts this level of usage is a result of current water shortages. Its claim of a shortage of water for Vermejo Park is based upon testimony by two Vermejo Park employees (N.M. Brief, pp. 24-26). The Special Master rightly questioned the credibility of that testimony and made his findings in accordance with the recorded stream flows at the Dawson gauge, with the acres actually irrigated and with the nature of the use of the property (Additional Findings, p. 3).

Using Appendix Table 2 of the Master's Additional Findings, a compilation of the actual U.S.G.S. records of the flows at the Dawson gauge for the period of record, Colorado has computed the average monthly flows of the Vermejo River at the Dawson gauge for the period from 1955-1979 (the period during which the rehabilitated District has been in operation) (Colo. Ex. 36).⁶ These average monthly flows, in acre feet, are as follows:

Oct	Nov	Dec	Jan	Feb	Mar
384	315	264	248	274	281
Apr	May	June	July	Aug	Sep
741	2,106	1,766	1,756	2,112	783

These figures show that during the irrigation season, April 15 to September 15 (N.M. Ex. D-4), the monthly flows are the highest. During the six-month period April through September the average monthly flow is 1,544 acre feet, and during the central irrigating period of May

⁶Colorado does not assert that average flows are the only measure of, or evidence relevant to, available supply for purposes of making an equitable apportionment. *See Wyoming v. Colorado*, 259 U.S. 419 (1922).

through August, the average flow at the Dawson gauge is 1,935 acre feet per month, or 7,740 acre feet for the entire four-month period.

The actual Dawson gauge figures (Additional Findings, Appendix Tbl. 2) show that there have been many times more water than is necessary to satisfy the senior priorities of Phelps Dodge Corporation and Kaiser Steel Corporation downstream and still satisfy the entire decreed right of Vermejo Park. Measurements of the Vermejo River at the Colorado-New Mexico state line confirm that fact (Colo. Exs. 5 at Tbl. 4, 68). Those records also show that the high flows occur during the irrigation season when Vermejo Park needs water. During the same period that Vermejo Park claims it was unable to irrigate more than 250 acres, the District was irrigating thousands of acres with a junior water right (Colo. Ex. 25; N.M. Ex. F-37). This evidence clearly establishes that there was generally sufficient water in the River for Vermejo Park to irrigate much more land than it has been irrigating. The New Mexico State Engineer, Mr. Reynolds, apparently agrees with this conclusion, testifying that Vermejo Park could have irrigated more than 250 acres (Tr. 2427). Thus, the Special Master's conclusion "that the Vermejo Park Corporation has not diligently put to use all the water available to it," naturally and logically followed from the stream flow records (Additional Findings, p. 3).

The Special Master correctly perceived that the Vermejo Park's failure to irrigate more than 250 acres is more closely tied to the availability of other irrigated lands in a different watershed (Tr. 1018, 2108-2109). The evidence establishes that the crop production needs of Vermejo Park are largely taken care of by the irrigation of its lands in the Cimarron River drainage (Tr. 2108-2109). Its indifference to irrigation from the Vermejo is also shown by the fact that it takes water only by means of one ditch (Tr. 2100-2104) and one pump, when the Vermejo River Decree (Colo. Ex. 25) permits it to divert

water from twelve ditches. This evidence indicates that Vermejo Park lacks desire and need to use its Vermejo River water for irrigation.

Its lack of desire to use this water is, as the Special Master noted, also attributable to the fact that Vermejo Park is primarily "an operation involving a hunting and fishing resort." (Additional Findings, p. 3; Tr. 2108-2109.) Vermejo Park owns a number of lakes which are entitled to store up to 2,847 acre feet of water for irrigation purposes (Colo. Ex. 25, p. 10). However, its resort clientele likes to fish in these lakes (Tr. 2108) and Vermejo Park has apparently chosen to use these structures primarily for recreational and aesthetic purposes rather than for the storage and release of water to maximize irrigation.

Based upon this telling evidence, the Special Master properly recognized that Vermejo Park's current and historic use reflected a lack of diligence, was a matter of its own choosing and did not result from current or historical water shortages.

B. Kaiser Steel Corporation.

The next New Mexico user on the Vermejo is Kaiser Steel Corporation (hereinafter Kaiser). The Special Master found that Kaiser owned the right to use 230 acre feet of water from the Vermejo and has leased rights to an additional 400 acre feet from Phelps Dodge Corporation (Additional Findings, p. 4). He found that the maximum use by Kaiser was 361.47 acre feet in 1976 and that this level of use was not due to shortage of supply (Additional Findings, pp. 4-5). The evidence amply supports this conclusion. Kaiser, through its lease from Phelps Dodge Corporation, has the right to divert 400 acre feet of water annually under the first priority on the River (Colo. Ex. 51).⁷ Kaiser owns another 230 acre feet of water with a

⁷This paper water right was leased to Kaiser by Phelps Dodge to avoid a finding of forfeiture, because that right has not been fully used since at least 1965 (New Mexico Exceptions to the Report of the Special Master and Brief in Support Thereof, April 7, 1982, p. 27).

priority senior to the District (Tr. 1722). Kaiser uses water in its coal mining operation. The water is needed year-round, except during a part of July when the mine shuts down for vacation purposes (Tr. 1726). Kaiser takes water from two points of diversion, one being an infiltration gallery and well in York Canyon at the mine site and the other being a pumping station on the Vermejo River (Tr. 1722-1723). An average of 25% of Kaiser's water needs has been supplied from York Canyon (Tr. 1744). This canyon and its drainage are wholly within New Mexico and will be unaffected by any apportionment to Colorado (Colo. Ex. 6, Fig. No. 1).

Despite its right to divert 630 acre feet, Kaiser has never diverted a total of more than 361.47 acre feet from both points of diversion (Colo. Ex. 6, Tbl. 2; Tr. 1727, 1738, 1747), and its water usage has declined since 1976 (Colo. Ex. 6, Tbl. 2). New Mexico showed an even smaller maximum use, 316.55 acre feet (N.M. Ex. D-6). Since this supply is required year-round, the monthly demands by Kaiser do not exceed 30 acre feet. And, as shown by the average monthly flows at the Dawson gauge and by the estimated state line flows, the levels of use by Kaiser have never been limited by shortage in supply (Colo. Exs. 5, 6). Indeed, Kaiser has never made a claim of shortage in supply. Based upon this evidence, the Special Master correctly found that Kaiser had available to it ample water to fully develop its water rights, but has chosen not to do so (Additional Findings, pp. 5-6).

New Mexico criticizes the Special Master's finding that Kaiser lacked the incentive to fully develop its water use. New Mexico points to the existence of a pumping plant capable of diverting Kaiser's entire supply from the Vermejo as evidence of its intention to develop its rights (N.M. Brief, pp. 28-29). It claims that:

Kaiser has maintained its full water right under New Mexico law by securing extensions of time in

which to apply the water to beneficial use.

(N.M. Brief, p. 29.)

New Mexico's criticism of the conclusions of the Special Master on Kaiser's water usage is unresponsive to the basic fact that Kaiser has never used the full measure of its right and to the fact that the Kaiser use has decreased.⁸ The Kaiser mine at York Canyon has been open since 1966, some 17 years (N.M. Brief, p. 28), and while New Mexico has not declared a forfeiture of the unused portion of its right, the only evidence as to why Kaiser has failed to use its entire water right is that it has not needed it. There is no indication when, if ever, the right would be fully used.

C. Phelps Dodge Corporation.

The third water user on the Vermejo River is Phelps Dodge Corporation (hereinafter Phelps Dodge) which is entitled to irrigate up to 501.19 acres with up to 1,002.38 acre feet of water (Colo. Ex. 25; N.M. Ex. G-2).⁹ This land is currently leased to the C.S. Cattle Co. The Special Master found that since 1965 Phelps Dodge and its lessee have irrigated between 80-150 acres and that at least 110 additional acres could have been irrigated (Additional Findings, p. 5). He also found that sufficient water was available to permit irrigation of additional lands if they had desired to do so (Additional Findings, pp. 5-6). Thus the failure to fully develop and exercise this water right can only be attributed to a decision not to do so.

⁸New Mexico's extensive discussion of Kaiser's two diversion points has nothing to do with the question of why Kaiser has failed to develop its water rights.

⁹Phelps Dodge has leased water sufficient to irrigate 200 acres, or 400 acre feet, to Kaiser to avoid forfeiture (Report, p. 5). Through its lease of that water, Phelps Dodge has, in effect, admitted that it cannot use all of its water rights. As noted above, Kaiser has failed to use all of this water right.

New Mexico agrees that since 1965 no more than 150 acres have been irrigated by Phelps Dodge and its lessee (Tr. 2163). It also agrees that an additional 110 acres are readily irrigable but contends there is insufficient water to do so (Tr. 2180). The Special Master properly rejected the contention of water shortage.

Phelps Dodge has the *first* priority on the River (Additional Findings, pp. 5-6; Colo. Ex. 25). Because its point of diversion is just below the Dawson gauge, the availability of water to Phelps Dodge is reflected by the Dawson gauge flows. That evidence shows that sufficient water was available during the irrigation season to satisfy the entire Phelps Dodge water right (Additional Findings, Appendix Tbl. 2; Colo. Ex. 67).

New Mexico's argument and the testimony of some of its witnesses that Phelps Dodge could not irrigate more than 80-150 acres are not credible (N.M. Brief, p. 30).¹⁰ At a time when "water was not available to irrigate the additional [Phelps Dodge] acreage . . .," with its number one priority (N.M. Brief p. 30), the upstream user, Vermejo Park, was irrigating between 200 and 250 acres with its lax irrigation practices and junior water right (Colo. Ex. 25; N.M. Ex. G-2). In addition, downstream, the individual Vermejo Canal users were irrigating over 300 acres with *junior* priorities and without the benefit of water storage facilities (Additional Findings, pp. 6-7). At

¹⁰New Mexico also claims that Phelps Dodge was justified in not irrigating more land because of the cost of reclaiming the land from flood damages (Tr. 2175), but this excuse is belied by the fact that there are at least 110 acres of land that could have been irrigated without any reclamation at all (Tr. 2180). Furthermore, both Mr. Compton (Tr. 1078, 1079, 1085, 1107-1109) and Mr. Reynolds (Tr. 2431), New Mexico witnesses, testified that Phelps Dodge could have irrigated more land.

the same time the District was irrigating thousands of acres under its junior water rights (Additional Findings, pp. 6, 8; Colo. Ex. 25; N.M. Ex. G-2). At no time during this period was Phelps Dodge required to pass water to any downstream water users. It is little wonder that, "A logical analysis of the water availability leads the Master to doubt the accuracy of New Mexico's claims." (Additional Findings, p. 5).

New Mexico asserts that there are substantial coal reserves on the Phelps Dodge property (N.M. Brief, p. 31) and claims that Phelps Dodge should be able to reserve 220-900 acre feet of water for mining uses, "when Phelps Dodge requires it." (N.M. Brief, p. 32.) However, potential and undeveloped future uses of water will not excuse nonuse of the water right. For, as this Court has stated:

Especially in those Western states where water is scarce, "[t]here must be no waste . . . of the 'treasure' of a River . . . Only diligence and good faith will keep the privilege alive." . . . Thus, wasteful or inefficient uses will not be protected . . . Similarly, concededly senior water rights will be deemed forfeited or substantially diminished where the rights have not been exercised or asserted with reasonable diligence.

Colorado v. New Mexico, 103 S. Ct. at 546; (citations omitted). Since Phelps Dodge has not exercised or asserted its rights with reasonable diligence, it is not entitled to receive the protection of this Court.

D. Individual users from the Vermejo Canal.

There are five users who take water from the Vermejo Canal between the Vermejo River and the District reservoirs. Their decreed rights and actual usage, as found by the Special Master, are summarized as follows:

	Decreed Acreage	Actual Acreage Irrigated
Duell-Messick ¹¹	48.4	48.4
Pompeo	101.5	50
Ray Porter	16.49	14
Vermejo Park Corporation	46.73	46.73
Odom	264.69	113

The Special Master found that those who failed to irrigate their full acreage had sufficient water to do so (Additional Findings, pp. 6-8). This conclusion was supported by the official monthly flows at the Dawson gauge (Additional Findings, Appendix Tbl. 2). These records show that for each month during the irrigation season there has been sufficient water available to satisfy those water rights.¹² In addition to the recorded flows at the Dawson gauge there is an accretion to the River of at least 800 acre feet per year between the Dawson gauge and the District headgate (Tr. 1405, 1406). The Bureau of Reclamation said that figure could be 1,000 feet more for a total accretion of 1,800 acre feet per annum (Tr. 1463-1465).

With the exception of the Porter water right, all of these users from the District canal have priorities senior to the priority of the District. There is no evidence that the Porter right has been curtailed by the District or by water

¹¹The Special Master inadvertently allocated approximately 58 acres to the Messick uses (Additional Findings, p. 7). New Mexico concedes that "Messick was left only 48 acres after the transfer to Kaiser [cite omitted]." (N.M. Brief, p. 32.)

¹²The maximum duty of water for these users is two acre feet per acre. As shown in the table above, the amount of land presently irrigated is 272.13 acres. The maximum irrigation season demand for this amount of land is 554.26 acre feet (Colo. Ex. 25; N.M. Ex. G-2).

officials and under it nearly all of the 16.49 acres has been irrigated (Tr. 1071, 1088, 1099, 1101, 1102). At this same time the District was able to irrigate thousands of acres with water diverted under its junior priorities. Therefore, there can be no reasonable doubt that sufficient water was available to satisfy these users and that the failure of these parties to exercise the full amount of their rights is not due to water shortages but instead to their failure to develop their rights diligently.

One probable explanation noted by the Special Master for the lack of diligence of these water users in developing their water rights is the fact that many are not full-time farmers (Additional Findings, pp. 6, 7, 19). Mr. Pompeo has a full-time job as a school superintendent (Tr. 2204). Mr. Porter has a full-time job with a cattle company (Tr. 2186). While such employment is certainly not to be condemned, it limits the ability of the user to diligently exercise his water rights. See Additional Findings, pp. 19-20.

E. Vermejo Conservancy District

At the heart of New Mexico's case (and of its criticism of the Special Master) is its contention that "an act of God," i.e., a "drought" during the 1970's, has prevented the District from fully developing its water rights (N.M. Brief, pp. 4, 33-34), and that, given more time, money and water, the District would irrigate all of its acreage. Time, money and water have been allocated to this project over the years in large amounts (Colo. Exs. 37, 38, 40, 43, 48; N.M. Ex. E-3). Despite that, the District has not diligently developed its water resources and since the 1950's has settled into an historic water use pattern of irrigating about 4,500 acres annually (Additional Findings, p. 8; N.M. Ex. F-37).

The Special Master correctly perceived that the District's historic use of water could not be blamed on current or historical shortages, stating:

New Mexico claims that the nonuse on the part of the District is caused by the "drought" of the early seventies. However, the drought of the 1970's cannot be responsible for the nonuse which has existed in the District since its formation in the fifties, nonuse through a time period when all other users, and evidence from flow tables found sufficient water available. (Tr. 166-169, 2174-2175, 2211-2213).

(Additional Findings, p. 8.)

That perception and the corresponding conclusion that the District has not diligently developed its water supply derive from the weight of the credible evidence presented at the trial. For example, New Mexico Exhibit F-37 shows that for each year, 1969 through 1975, the District irrigated more acreage than it had in all but three of the previous fourteen years (N.M. Brief, pp. 34-35; N.M. Ex. F-37). Ironically, the years in which the greatest irrigation occurred are the same years that New Mexico claims the District suffered severe drought (N.M. Brief, p. 34).

New Mexico's claim is further refuted by the average number of acres irrigated annually by the District in the prior decades, decades during which no "drought" claim is made: i.e., 4,573.8 acres for the 1960's and 4,453.2 acres for the 1950's as compared to 4,147.4 acres for the 1970's. The slightly lower figure for the 1970's is attributable to the low water year of 1977, when the District did not release any water from its reservoirs for irrigation,¹³ resulting in a very low irrigated acreage figure that year (N.M. Ex. F-37). However, if the year 1977 is omitted, the average acreage irrigated during the 1970's increases to 4,534.33 acres. This demonstrates that during the 1970's,

¹³Every year the District gave preference to the more than 2,000 acre feet to be held in, and released from, the reservoirs in order to provide 36 acre feet of consumptive use for livestock watering, a 98% waste of water (Tr. 1316, 1318, 1319; N.M. Ex. E-3).

viewed as a whole, the District was able to irrigate as much acreage as it had the prior two decades. It shows that the number of acres irrigated by the District was not due to lack of supply. *See also* pages 30-34, *infra*.

The absence of any drought in the 1970's is further demonstrated by exhibits which show that precipitation in areas surrounding the Vermejo was not significantly lower on the average in the 1970's than in prior decades (N.M. Exs. F-4, F-6, F-8, F-9). In particular, New Mexico Exhibit F-4 shows no significant variation in precipitation at the City of Maxwell, located within the District itself, during the 1950's, 1960's and 1970's. The variation in any decade was slight, thus refuting any claim by the State of New Mexico that a "severe drought" in the 1970's had curtailed the District's irrigation (N.M. Ex. F-37).¹⁴

New Mexico attempts to rehabilitate its case regarding the District's historic use by reengineering its case on appeal. It does so by creating an exhibit that purports to show water shortages in the District (N.M. Brief, pp. 34-35). That exhibit is deceptive. It is taken from New Mexico Exhibit F-37, but omits the important column containing the amount of water released for irrigation in each of the years. Thus in 1955, for example, the amount of water actually released to the 3,763 acres irrigated was 9,225 acre feet, or 2.45 acre feet per acre, an amount greatly in excess of the 1.25 acre feet per acre shown in the brief. It is also greatly in excess of the 1.5 acre feet per acre allowed by the decree (Colo. Ex. 25; N.M. Ex. G-2). An

¹⁴At page 25 of his Additional Findings, the Special Master perceptively discusses a significant inconsistency in New Mexico's factual argument:

New Mexico discusses the growth and development of Colfax County as a result of the Vermejo benefits. The growth occurred in "the decade of the 1970's." (Defendants' Brief on Remand, p. 67.) However, in earlier discussion of historic water uses and supply, the decade of the 70's was labelled a drought period. (Tr. 1179, 1193, 2211-2213.)

allocation in excess of 1.5 acre feet per acre also occurred in 1956, 1958, 1959, 1962 and 1965 (N.M. Ex. F-37).

To arrive at its proration figures in that exhibit, New Mexico divides the amount of water released from the reservoirs by 7,380 acres, the amount which the District is permitted by the Bureau of Reclamation to irrigate, rather than by the amount of acres actually irrigated (Colo. Ex. 33; N.M. Ex. F-37; Tr. 1306, 1308). Since the 7,380 acres have never been irrigated, the New Mexico proration figures shown on the exhibit never correspond to the acreage actually irrigated and understate the amount of water available and released for irrigation (N.M. Ex. F-37). The Bureau of Reclamation confirms that the District has not developed its full acreage (Colo. Ex. 36; Tr. 1569).

Another failing of the exhibit is that it does not reflect the amount of water available in the reservoirs and which was not released for irrigation. See N.M. Exs. F-23, F-24. These trial exhibits show that large amounts of water were carried over in the reservoirs in some years (N.M. Exs. F-23, F-24). Part of the carryover, of course, was to provide the 2,000 acre feet for the wasteful stock-water usage, but significant amounts in excess of that were not released for irrigation in years when New Mexico claims a shortage existed. For example in 1979, New Mexico claims a shortage of 4,430 acre feet (N.M. Brief, p. 41) but failed to use 6,800 acre feet stored in three of its reservoirs (N.M. Exs. F-23, F-24). Similar conditions existed in other years such as 1966 and 1967. *Id.* A showing of the carried over water would reflect the amount of water really available for irrigation if wasteful practices were eliminated.

The exhibit is also misleading because it assumes that the maximum duty of water, 1.5 acre feet per acre, is necessary for a full supply. That premise ignores the meaning of duty of water and ignores the fact that the District has not needed the maximum duty of water and

has not used it when available. In the New Mexico court decrees adjudicating water rights on the Vermejo River and Chico Rico, the court found that the *maximum* duty of water for the lands comprising the District was 1.5 acre feet per acre (Additional Findings, p. 2; N.M. Ex. G-2; Colo. Ex. 25). Duty of water is commonly understood as:

[T]hat measure of water, which, by careful management and use, without wastage, is reasonably required to be applied to any given tract of land for such period of time as may be adequate to produce therefrom a maximum amount of such crops as ordinarily are grown thereon. It is not a hard and fast unit of measurement but is variable according to conditions.

United States v. Alpine Land & Reservoir Co., 697 F.2d 851, 854 (9th Cir. 1983), quoting *Farmers Highline Canal & Res. Co. v. City of Golden*, 129 Colo. 575, 584-585, 272 P.2d 629, 634 (1954); see also *Basin Electric Power Cooperative v. State Board of Control*, 578 P.2d 557, 564 (Wyo. 1978); *State ex rel. Reynolds v. Mears*, 86 N.M. 510, 515-516, 525 P.2d 870, 875-876 (1974); 5 *Water and Water Rights* § 408.2 at 76-82 (R. Clark ed. 1972). Since the duty of water varies according to conditions, the maximum duty of water represents the greatest amount of water ever required to grow a crop without waste. Yet, New Mexico treats the maximum duty of water as the minimum amount necessary to provide the District a full water supply. It then argues that anything less than the maximum duty of water constitutes a shortage. Only by converting this measure of maximum need into the measure of minimum supply is New Mexico able to construct its claimed water shortages.

The fact that duty of water is variable and that the maximum duty is not necessary is graphically shown by the exhibit at pages 34-35 of New Mexico's Brief. The exhibit shows that no correlation exists between the amount of water prorated and the number of acres

irrigated by the District. In 1969, 1974 and 1975, the District irrigated 6,294, 6,262 and 5,422 acres, respectively, based on prorations of .33 acre feet/acre, .54 acre feet/acre and .25 acre feet/acre, respectively. On the other hand, in years such as 1959 and 1962 when the maximum duty of 1.5 acre feet per acre was available to irrigate all 7,379 acres, the District irrigated only 4,693 and 5,869 acres, respectively.¹⁵ This demonstrates that the duty of water can vary from year to year, that the District is able to irrigate and has irrigated vast acreages with less than 1.5 acre feet per acre, and that even when the maximum duty of water has been available the District has not fully developed its acreage. The evidence credits the Special Master's conclusion that the District has not been limited by shortage in developing its acreage (Additional Findings, p. 8, 9).

F. Water users on the Canadian River

New Mexico asserts that water users on the Canadian River below its confluence with the Vermejo are dependent upon water spilled past the District headgate (N.M. Brief, pp. 14-18). It now claims that any diversion by Colorado will reduce the supply of water available to these users (N.M. Brief, pp. 10-11, 14-18, 35, 50-51, 52). The Special Master considered these claims and found that "[t]he Vermejo is virtually a closed system. Most of the water is consumed by the various users and little, if any, of the water of the Vermejo reaches the Canadian River." (Report, p. 2.) And, "[t]he effect of a diversion in Colorado on those who live below the District would be negligible and virtually nonexistent." (Report, p. 4.)

The conclusions of the Special Master are borne out by New Mexico's own evidence. New Mexico claims that the Canadian River water users are dependent upon the flood flows which spill past the District headgate and

¹⁵These proration figures are discussed earlier in this section.

that a diversion by Colorado will injure these users. (N.M. Brief, pp. 11, 17). For Colorado's proposed diversions to have any effect on these flood flows, the flows must be available for diversion, in whole or part, by Colorado. The evidence shows they are not.

There are 30 square miles of the Vermejo River drainage in Colorado and 12 square miles of that drainage are located above Colorado's proposed points of diversion (Colo. Ex. 5; N.M. Ex. F-36; Tr. 1426-1427). All of Colorado's points of diversion are located above 9,920 feet elevation (Colo. Ex. 5; N.M. Ex. F-36). Thus, for Colorado to divert these flood flows they must originate in the high mountain terrain of the Vermejo drainage above Colorado's points of diversion. In his testimony, New Mexico's chief engineering witness explains why this will not occur:

Within that annual precipitation, of course, there are varying intensities of precipitation, the plains area and dissected plateau receive much of their precipitation from intense thunderstorms which produce flash floods of relatively large peak flows with not much volume.

Whereas in the higher mountain portions of the drainage area, much of the drainage results from snow fall which produces a flow over a longer period of time.

(Tr. 1243-1244.)

Since all of the Colorado portion of the Vermejo drainage is above 9,000 feet, intense thunderstorms are not common (Tr. 1243-1244). Thus, the flood flows which spill past the District headgate do not generally originate in the high mountain drainage in Colorado and therefore are not available for diversion by Colorado. Since they are not available for diversion by Colorado, Colorado's diversions can have little or no effect on flood flows spilling past the District headgate.

Moreover, for New Mexico's arguments to have any logical force, it must be established that these low volume flood flows do, in fact, reach the users on the Canadian River. However, the fact that flood flows pass the District headgate does not mean they are available to water users on the Canadian River some 155 river miles downstream (Tr. 1426). New Mexico's own actions indicate that the flood flows are not available to the Canadian users to the extent it claimed.

Under New Mexico law, new appropriations of water are allegedly not allowed on fully appropriated streams (N.M. Brief, p. 70). The reason for this, according to the New Mexico State Engineer, is that any new appropriation would detrimentally affect existing rights (Tr. 2365-2366). Thus, with the shortages alleged to plague water users on the Canadian River (Tr. 1042-1056, 1368-1376; N.M. Exs. C-3, F-25, F-26, G-4, G-5, G-6, G-7, G-8, G-9, G-15, G-28, G-30, G-31), one would not expect the State of New Mexico to grant any junior water storage rights for flood waters tributary to the Vermejo River which could be potentially available for users downstream on the Canadian. Yet, that is precisely what New Mexico has done. Over objection by Canadian River water users, New Mexico water officials allowed a junior flood water appropriation on Van Bremmer Arroyo, a tributary of the Vermejo River (N.M. Ex. G-10 2nd part; Tr. 1075). It was apparently approved on the grounds that flood waters could be captured by a junior priority with little effect on downstream users (Tr. 1075). Thus, New Mexico itself has acknowledged that diversion of flood flows from the Vermejo may have little or no impact on the Canadian water users.

New Mexico sought to rehabilitate its case on the Canadian River through its Amended Narrative Tender of Evidence. In reliance on proposed Exhibit F-56 it claimed that in August and September of 1981, 5,500 acre

feet of water spilled past the District headgate (N.M. Brief, p. 17). However, proposed New Mexico Exhibit F-56 also reveals that on only one day in August and September of 1981 did the mean daily flow of the Vermejo River exceed the diversion capacity of the District's canal, 600 c.f.s. In August and September of 1982, New Mexico claims 6,500 acre feet spilled past the District's diversion facilities (N.M. Brief, p. 17). At no time during that period did the mean daily flow exceed the diversion capacity of the canal (Proposed N.M. Ex. F-57).¹⁶ Presumably, the spills of water within the District's diversion capacity are due to dirt and debris allowed to accumulate at the diversion structure (Colo. Exs. 38, 40, 43).

Moreover, New Mexico's proposed evidence, if it is accurate, portrays extreme hydrologic events that have occurred only twice in the preceding thirty-one years (N.M. Ex. F-29). These extreme events do not, however, establish that the flood flows would have been available for diversion by Colorado. They also should not be permitted to mask the inefficient operation of the District's diversion canal. The District is entitled to divert all water in the Vermejo River at its point of diversion and it allowed spills in 1981 and 1982 of more water than Colorado would have diverted in each year, i.e. 4,000 acre feet (Colo. Ex. 19, p. 29).

The foregoing illustrates that New Mexico's claims of injury to users on the Canadian is argument without foundation in logic or fact. The Special Master was correct when he concluded that the effect of a diversion by Colorado on those who live below the District would be virtually nonexistent.

¹⁶For purposes of computing spills, New Mexico uses "mean daily flow v. diversion capacity." (Tr. 1269.)

III. THE SPECIAL MASTER'S ANALYSIS OF THE AVAILABLE SUPPLY OF WATER FROM THE VERMEJO RIVER THOROUGHLY CONSIDERS THE RELEVANT FACTORS LISTED BY THE COURT AND HIS FINDINGS ARE SUPPORTED BY THE CLEAR AND CONVINCING EVIDENCE PRESENTED AT TRIAL.

In response to the Court's inquiry regarding "the available supply of water from the Vermejo River," *Colorado v. New Mexico*, 103 S. Ct. at 549, the Special Master reviewed the evidence and made numerous additional findings (See generally, Additional Findings, pp. 9-27, 28). His conclusion on this matter is:

2. The available supply of water from the Vermejo River is sufficient for current New Mexico users, and with reasonable conservation measures would meet the needs of Colorado users as well. The available water supply can be enhanced through diligent and complete development of the Vermejo source as well as alternative sources. Many current users do not require a continuous supply and systems of reservoirs provide relief for those who do.

(Additional Findings, p. 28.)

His analysis in reaching that conclusion may be fairly summarized as follows:

A. Variations in streamflow

The Special Master recognized that the flow of the Vermejo River varies from year to year. Depending upon the period of measurement, different annual flow calculations will result. The Special Master concluded that "more than enough [water is available] to supply the current uses below the [Dawson] gauge." (Additional Findings p. 11.) Using the guidelines set forth in *Wyoming v. Colorado*, 259 U.S. 419 (1922), in light of the flow in the Vermejo for "each individual month and each

individual year," he found that on the Vermejo River ". . . there does not exist a situation where the supply is 'intermittent' and 'materially deficient at short intervals.'" (Additional Findings, p. 11.) As shown by the discussion at pages 10, 11, 13, 15-20, *supra*, the Special Master's conclusions are correct and fully supported by the evidence.

New Mexico vehemently criticizes the Special Master's analysis. It asserts that he failed to recognize the demands of the New Mexico users and therefore was unable to see the deficiencies in the supply that it asserts exist (N.M. Brief, pp. 39, 47). New Mexico also claims the Special Master used average annual flows as his standard for determining available supply, and claims this standard was rejected by this Court (N.M. Brief, p. 36). For these reasons it asks that this Court reject the Special Master's determination of available supply.

The first step in New Mexico's analysis is to establish its demand of water which it claims is either 17,000 or 11,400 acre feet (N.M. Brief, p. 39). However, these figures for demand overstate the acres irrigated, overstate the amount of water needed and understate the water supply historically received. See generally pages 31-34, *infra*. For the reasons stated at pages 20-23, *supra*, these demand figures are deceptive, greatly exaggerated and were properly discounted by the Special Master.

New Mexico's claim that the Special Master relied on average annual flows in determining the available supply is incorrect. The Special Master considered various average annual flows to illustrate the general water supply (Additional Findings, p. 11). He then observed:

Obviously, the figures can be used to reach nearly any result, and averages are unfortunately unavailable to irrigate crops and provide water for other uses; however, it is the opinion of the Master

that even looking at each individual month and each individual year, there does not exist a situation where supply is "intermittent" and "materially deficient at short intervals."

(Additional Findings, p. 11.)

The Special Master plainly did not rely on average annual flows but instead looked at the best available information, the monthly flows for each month of each year 1916, 1917, 1920 and 1928 through 1979. This is far more precise than the evidence of annual streamflows available to the Court when making its equitable apportionment in *Wyoming v. Colorado*, *supra*, and far more precise than the stream flow records used by the Court when it rejected Kansas' claim of injury in *Colorado v. Kansas*, 320 U.S. 383 (1943).

New Mexico, however, asserts that monthly flows are not sufficiently precise because they obscure flood flows and do not show "true availability" (N.M. Brief, p. 49). Thus, New Mexico would apparently require proof of the daily flow diverted by New Mexico users in order to determine the available supply. Yet, it is New Mexico's own lax administrative practice that has prevented this information from being available. Moreover, this suggestion is not materially different than requiring that the low flow of record be used as the measure of available supply, disregarding the natural variability of stream flows in the West. This standard was rejected by the Court in *Wyoming v. Colorado*, 259 U.S. at 484, recognizing that use of reservoir storage of high flows and other reasonable conservation measures were required in assessing the available supply. The Special Master properly did not adopt New Mexico's suggested standard. Instead, to determine the adequacy of the available supply, he considered all relevant factors including the monthly flows for each year of record, the needs of each New Mexico user, the availability of reservoir storage and other reasonable conservation measures (Additional

Findings, pp. 1-21). This Court would permit him to do no less. *Colorado v. New Mexico*, 103 S. Ct. at 545; *Nebraska v. Wyoming*, 325 U.S. 589, 618 (1945).

B. Need for a continuous supply.

The Special Master properly found that the only New Mexico user from the Vermejo that has need for a year-round supply is Kaiser (Additional Findings, pp. 16-17). Its monthly demand is minimal, between 13 and 30 acre feet (N.M. Ex. F-30; Additional Findings, pp. 16-17). The figures at the Dawson gauge reveal that sufficient water is available for Kaiser's senior priorities on a monthly basis. However, Kaiser also takes water from York Canyon, a source which would not be affected by Colorado's diversion (Tr. 1744; Additional Findings, p. 17). The remaining direct flow water users on the Vermejo all use water for irrigation from April 15 to September 15 only (N.M. Ex. D-4). The monthly figures at the Dawson gauge also reveal a more-than-adequate supply in the Vermejo to meet the needs of these direct flow irrigation users (Additional Findings, Appendix Tbl. 2).

The District's irrigation needs are met by the reservoir system which stores the water supply and through controlled releases makes it available on a monthly and year-to-year basis (Tr. 1296; N.M. Exs. F-23, F-24). This system allows the District to capture high flows for later use and allows water to be carried over from a particularly wet year for use during a drier year (N.M. Exs. F-23, F-24). Contrary to New Mexico's claim that "... the Vermejo has historically provided no carryover water to conserve" (N.M. Brief, p. 55), the District in fact carried over water stored from the Vermejo River in all but two years from 1955 through 1979 (N.M. Exs. F-23, F-24). This demonstrates that by the use of reservoir storage the District is able to equalize and enhance its water supply. See *Wyoming v. Colorado*, *supra*.

In an attempt to discredit the conclusions reached by the Special Master on the available supply of the Vermejo River, New Mexico exaggerates the demand for water on the Vermejo River. At pages 40 and 41 of its Brief, New Mexico again attempts to reengineer its claim of inadequacy of the Vermejo River supply at the Dawson gauge in relation to demands for water downstream from the gauge. Stating that the "Demand at Dawson Gauge for Full Acreage" is 17,000 acre feet, New Mexico purports to compute the historic shortages on the Vermejo below the gauge. New Mexico cannot create on paper a greater demand for water than actually exists.

The 17,000 acre feet "Full Demand" figure grossly exaggerates the true demand. It assumes that the District has at all times been ready, willing and able to irrigate the full 7,379 acres and that the maximum duty of water, 1.5 acre feet, is required to do so. The inaccuracy of these claims is shown by New Mexico's own brief, and by other evidence in the record. The table at pages 34 and 35 of the New Mexico Brief purports to show water prorrations and acres irrigated by the District. A proration of 1.50 acre feet/acre is, according to New Mexico, "[a] full water supply." (N.M. Brief, p. 34.) In 1959, when a "full water supply" was in the District reservoirs and was available to irrigate all 7,379 acres, the District farmers chose to irrigate only 4,693 acres.¹⁷ Similarly, in 1962, the District chose to irrigate only 5,869 of its acres, even though a "full water supply" was available from storage in the District's reservoirs. Historic use by the District proves it has never irrigated all of its acreage, even when a "full water supply" was present.

The second way New Mexico misuses the figures to establish a shortage in available supply is by equating maximum duty of water with a full water supply. Yet, as explained at pages 21-22, *supra*, to do this converts the measure of maximum need into the measure of minimum supply. The result is that the "demand" figures appear-

¹⁷By contrast, in 1969, when less than a "full water supply" was in the District reservoirs, the District was able to irrigate 6,294 acres.

ing in the tables at pages 34, 35, 40, 41, 43 and 44 of New Mexico's Brief are greatly exaggerated. These figures assume that, unless the maximum duty of water is applied to all 7,379 acres of the District's lands (or a total of 17,000 acre feet at the District headgate), a "shortage" exists (N.M. Brief, pp. 39-47). That contention is not true.

The District does not "need 1.5 acre-feet per acre per annum" to have an adequate supply of water for its irrigation purposes (N.M. Brief, p. 39, n. 11). The 1.5 acre feet per acre figure represents the maximum amount of water which may lawfully be applied to the District lands (Colo. Ex. 25, p. 3), and the District has historically chosen to apply a lesser amount of water to its irrigated acreage even when the maximum duty of water is available (N.M. Exs. F-23, F-24, F-37). For example, in 1967 the District irrigated 3,902 acres and released 4,280 acre feet of water from its reservoirs for irrigation purposes (N.M. Ex. F-37). According to the table at page 40 of New Mexico's Brief, the District experienced a "shortage of supply" of 8,560 acre feet of water in 1967. However, no "shortage of supply" existed. New Mexico Exhibits F-23 and F-24, the end-of-month volumes of water stored in the District's Stubblefield Lake and Lake #2 show that through the end of 1967 some 6,000 acre feet of water were being stored in those two lakes. New Mexico Exhibit F-24 also shows that through the end of 1967 some 5,300 acre feet were being stored in the District's Lake #13. Thus, 11,300 acre feet of water were being stored by the District through the end of 1967, a year in which New Mexico claims a "shortage of supply" of 8,560 acre feet (N.M. Brief, p. 40). That evidence shows that the District had more water to release during the irrigation season but apparently felt that the maximum duty was not necessary to irrigate the crops.

Similarly, in 1979 the District irrigated 3,398 acres, releasing 3,690 acre feet of water from its reservoirs (N.M. Ex. F-37). New Mexico claims a "shortage of supply" during that year of 4,430 acre feet (N.M. Brief, p. 41).

Incredibly, New Mexico Exhibits F-23 and F-24 show nearly 6,800 acre feet of water in storage in Stubblefield Lake and Lakes #2 and #13 through the end of 1979. This evidence shows not only that the District determined that the maximum duty of water was not necessary to irrigate the land, but that a lesser number of acres was irrigated than the supply would allow. The basic premises of New Mexico's tables in its brief, i.e., that the District needs 1.5 acre feet of water per acre and that the District would irrigate the maximum allowable acreage if it had the supply of water, are refuted by New Mexico's own exhibits.

Those exhibits further demonstrate that in some years the District actually violated its decree and allocated more than 1.5 acre feet of water per acre irrigated. New Mexico Exhibit F-37 shows that in 1965 the District released 7,970 acre feet of water to irrigate only 3,218 acres of land, meaning that 2.48 acre feet of water was made available to each acre irrigated (N.M. Ex. F-37; Tr. 1308-1309). In 1955, 9,225 acre feet of water were released to irrigate 3,763 acres, or a total of 2.45 acre feet per acre. The District also violated the Vermejo Decree by making available more than the maximum duty of water in 1956, 1958, 1959 and 1962 (N.M. Ex. F-37). Thus, contrary to New Mexico's claims, the Special Master correctly pointed out that water administration in New Mexico would mean less waste and more water for lawful uses.

The discussion above shows that the District's water needs cannot be condensed to supply/demand charts, as New Mexico would argue. The evidence demonstrates that at times the District irrigates less than all of its acreage without a full proration, even though it could have irrigated all of its acreage with a full proration. It shows that the Special Master correctly considered numerous factors in determining the available supply, and rightfully did not focus exclusively on misleading

charts which do not depict water requirements or irrigation practices. Having considered all of the evidence, the Special Master presented to this Court the following and other detailed findings based upon a consideration of *all* of the evidence in this case:

It is the opinion of the Master supported by substantial evidence that the existing users of Vermejo water have not diligently and efficiently developed uses which would justify their need to retain their full decreed irrigation or water rights. While shortages and dry years do exist in the history of the Vermejo River, it does not appear that those shortages are the basis behind the current users failure to fully develop their decreed water rights.

(Additional Findings, p. 9.)

C. Equalizing and enhancing the water supply through water storage and conservation.

The Special Master found that the District is the only New Mexico user that could be materially affected by an apportionment to Colorado (Additional Findings, p. 8; Tr. 1323). The District is also the New Mexico user with the greatest ability to equalize and enhance the available water supply through storage and conservation (Additional Findings, pp. 12, 17). Abundant water storage capacity already exists in the District reservoir system (Tr. 1298). Those facilities include a diversion structure on the Vermejo capable of diverting the entire flow of the River 99% of the time and a reservoir system which can store over 22,600 acre feet of water (Tr. 1298; Colo. Ex. 50, p. 2). This storage system makes it possible for the District to store all of the available water and thereby equalize the water supply on a monthly and an annual basis (N.M. Ex. F-23, F-24).

In the portion of his Additional Findings pertaining to equalizing and enhancing the water supply through water storage and conservation, the Special Master thoroughly discusses conservation in the context of each state's duty "to conserve the common supply." *Colorado v. New Mexico*, 103 S. Ct. at 547. (Additional Findings, pp. 11-12). The Special Master examined the evidence to determine whether New Mexico was fulfilling its duty and concluded that "the New Mexico users are not doing all that is possible to preserve and enhance their available supply." (Additional Findings, p. 16.) His discussion is particularly important because it shows: (1) that New Mexico does not diligently allocate and administer water from the Vermejo River; (2) that the absence of water administration in New Mexico provides little incentive for water users in that state to use water efficiently or to practice diligently conservation; and (3) that the injury which New Mexico claims may occur could be alleviated through administration of the available supply (See generally, Additional Findings, pp. 12-16).

The evidence clearly supports the Special Master's analysis. Mr. Compton, head of the State of New Mexico department charged with the administration of the streams, testified repeatedly that his department makes no attempt to ensure that the proper amount of water is being diverted in relation to the acreage being irrigated or to declare all or part of the water rights forfeited for nonuse (Tr. 987, 1072, 1087-1089, 1098-1100, 1101, 1107-1109, 1115, 1116, 1117). In fact, the State of New Mexico has no idea of how much, by whom or when water is used. This absence of administration of water usage on the Vermejo and failure to give notices of forfeiture was confirmed by Mr. Reynolds, the New Mexico State Engineer (Tr. 2422-2436).

An example of potential overusage detrimental to the District that could have been curtailed through water administration is evidenced in New Mexico's own

Exhibit A-130, which indicated that during the period from September 17 to October 22, 1980, C. S. Cattle Company, the Phelps Dodge lessee, may have diverted approximately 300 acre feet from the Vermejo River. This period is after the irrigation season, i.e., April 15 to September 15 (N.M. Ex. D-4). The Phelps Dodge lessee apparently diverted in one month, after the irrigation season, all of the water which it could lawfully apply throughout the year, i.e. 300 acre feet for 150 acres, having also diverted water during the irrigation season (Tr. 2168). Mr. Davis of the C. S. Cattle Company acknowledged that it irrigated during the regular irrigation season stating that the C. S. Cattle Company "took all it could get" from the Vermejo (Tr. 2168). Prevention of such excess diversions, with a consequent saving of water, would have inured directly to the benefit of the District.

New Mexico's general indifference to administration along the Vermejo River sanctions wasteful water uses (see Colo. Ex. 41). For nearly 30 years prior to completion of the closed stock and domestic water system, the District had been releasing large volumes of water from its reservoirs for livestock watering purposes. This water was delivered through ditches and laterals, requiring eighteen hours or more to flow from the reservoirs to the livestock. Approximately 2,154 acre feet of water had to be released from the District's reservoirs annually in order to deliver the approximately 36 acre feet which are actually consumed by the livestock. This excessive loss, approximately 2,118 acre feet, in the delivery of this stock water, i.e., a loss of over 98% was known to New Mexico water officials (Colo. Ex. 41; N.M. Ex. E-3).¹⁸

¹⁸Under New Mexico's water laws, a 93% loss of water prior to application to beneficial use has been found to be so unreasonable that the use is not considered a beneficial use. *Jicarilla Apache Tribe v. United States*, 657 F.2d 1126 (10th Cir. 1981), applying New Mexico water law. See also *State ex rel. Erickson v. McLean*, 62 N.M. 264, 308 P.2d 983 (1957).

The curious attitude in New Mexico toward the administration of water rights is perhaps best illustrated by the results of the District's request for a water master to administer water rights on the Vermejo and Chieco Rico drainages (Colo. Ex. 41). A meeting was held between District and state officials to discuss this request. At that meeting the state officials pointed out that the District's water storage rights were not in order. *Id.* The state officials also pointed out that if a water master was appointed, measuring devices would have to be installed on all reservoirs and water sources. *Id.* The District would then be charged for all water passing the meters, not water received. *Id.* Most significantly, the State said it would also charge the District for what it believed to be the *excessive* losses in the canals and laterals when making farm deliveries. *Id.* Finally, when the decreed storage level was reached in the District's reservoirs, further storage by the District would not be permitted, regardless of the ability to store more water. *Id.* However, the state officials did offer an alternative to such administration. They suggested that the District consider operating as it had in the past until challenged by the state. *Id.* No water master was appointed.

This example shows that one of New Mexico's chief water rights administrators, Mr. Compton, a witness in this case, was aware of the waste of water by the District's canals and laterals but made no effort to correct the situation (Colo. Ex. 41). Thus, this is a case where proper administration could prevent the waste of water and result in conservation of the common supply. In the face of this evidence, New Mexico would have the Court reject the Special Master's findings, deny water to Colorado and instead believe that ". . . administration could not conserve Vermejo water" (N.M. Brief, p. 72.)

D. Availability of substitute sources of water to relieve demand for water from the Vermejo River.

The question of whether "substitute sources of water [are available] to relieve the demand for water from the Vermejo River," is obviously related to the questions of whether, when and by whom such sources would be needed as a result of the Colorado diversion. If reasonable conservation measures are available to offset the effect of a diversion by Colorado, then the need for alternative supplies is greatly diminished, if not eliminated. That is the situation here because, as the Special Master found, "[t]he injury, if any, to New Mexico resulting from the Colorado diversion could be offset by reasonable conservation measures." (Additional Findings, p. 29.)

In his review of the record, the Special Master correctly noted the evidence showed that Vermejo Park, Kaiser and the District all have sources of water other than the Vermejo (Additional Findings, p. 17). He then stated that he did

... not mean to imply that these alternate sources should and will be total replacements for the water from the Vermejo River. They are not sufficient for that purpose. They merely serve to relieve the demand for Vermejo River water, which water is not denied in its entirety to New Mexico users, nor will it be with the proposed Colorado diversion.

(Additional Findings, p. 27.)

The Special Master correctly found that the alternate sources could not completely replace the Vermejo River, nor was such replacement necessary.

Neither Vermejo Park nor Kaiser will have any need for an alternate water supply as a result of the Colorado

diversion (Tr. 1323). However, each does have a water supply from sources other than the mainstream of the Vermejo. Vermejo Park owns water rights for irrigation of lands in the Cimmaron River watershed (Tr. 2109). It has used this water instead of its Vermejo River water in order to accommodate the recreational use of its Vermejo property (Additional Findings, p. 3). Thus, it is not completely dependent on the water in the Vermejo River. Kaiser, in the event of severely low flows along the mainstem of the Vermejo River, has a diversion point in York Canyon, which can supply water to the mine for a limited time.¹⁹ Kaiser also has performed a study in relation to the importation of some 800 acre feet annually from the Cimmaron River watershed (Tr. 1728; N.M. Ex. F-33, pp. 33-35).

Nor is the District entirely dependent upon the Vermejo. The supply of water received by the District from the Vermejo River accounts for only about 54% of its total water supply (Colo. Ex. 5, Tbl. 7; Colo. Ex. 6, Tbl. 3; Tr. 229; Additional Findings, pp. 8-9). The Chico Rico accounts for about 36% of that supply and Willow, Crow, Curtis and Salt Peter Creeks account for the remaining 10% (Additional Findings, pp. 8-9; Colo. Exs. 5 at Tbl. 7, 6 at Tbl. 3, 38, 40, 43; Tr. 229). While the Chico Rico and the various smaller tributary creeks are not alternate sources in the sense of previously unused water supplies, their availability does show that the District is not wholly dependent upon the Vermejo River.

¹⁹While New Mexico claims this source could not supply Kaiser's entire supply for an extended period of time (N.M. Brief, p. 54), the record shows that such a supply would not be needed for any extended period, if at all (Additional Findings, Appendix Tbl. 2).

IV. REASONABLE CONSERVATION MEASURES ARE PRESENTLY AVAILABLE IN NEW MEXICO WHICH WILL ELIMINATE WASTE AND INEFFICIENCY IN THE USE OF WATER FROM THE VERMEJO RIVER. COLORADO'S PROPOSED USE IS DESIGNED TO PREVENT WASTE AND MAXIMIZE EFFICIENT USE OF VERMEJO RIVER WATER.

The Special Master identified several areas in which New Mexico could eliminate waste and inefficiency from its use of Vermejo River water, including: improved administration of water rights and of diversions of water from the Vermejo River in New Mexico; maintainance of diversion structures in proper working condition; greater devotion to diverting and using efficiently the available water supply; refusal to encourage or sanction wasteful water uses or practices (Additional Findings, pp. 18-21). If New Mexico chooses to institute these reasonable conservation measures, the Special Master concludes there will continue to be "an adequate water supply to satisfy the needs of all users." (Additional Findings, p. 21.) If New Mexico refuses to discharge its duty to act reasonably in conserving the common supply, the Special Master states that, "New Mexico's inefficient water use should not be charged to Colorado." (Additional Findings, p. 20.)

A. Conservation and efficient use through administration.

The evidence fully supports the Special Master's findings on this point. The evidence in this case reveals that administration of the waters of the Vermejo River and the Chico Rico River is virtually nonexistent. This contrasts with the situation in Colorado where there are strict administration, records of diversions and the curtailment of wasteful diversions (Tr. 510-523). Colorado does so because it has long recognized that proper water administration is as important to proper water use as is the granting of the right. C.R.S. 1973, §§37-92-501, 502; *Wadsworth v. Kuiper*, 193 Colo. 95, 562 P.2d 1114 (1977). The testimony of the State Engineers for

each state highlights the differences between water administration in New Mexico and Colorado (Additional Findings, pp. 13-16). The subject of conservation through water administration is discussed in detail above and to avoid excessive repetition, the Court is referred to that discussion which appears at pages 35-37, *supra*.

New Mexico criticizes Colorado and the Special Master for their discussion of conservation measures available to New Mexico. It says that "Colorado's case respecting conservation was nothing more than unfounded innuendo and accusation, none of which is supported by fact."²⁰ New Mexico calls the Special Master's treatment of the conservation issue "entirely conjectural" and "superficial," stating that the "Master simply rambles on about an undefined, generalized need for conservation" (N.M. Brief, pp. 57, 58), when the Special Master's discussion is neither conjectural nor superficial. To evaluate New Mexico's argument, the Court must be made aware of several facts.

As discussed at pages 35-37, *supra*, the State of New Mexico keeps no records of diversions from the Vermejo in New Mexico or of amounts of water applied to a beneficial use.²¹ New Mexico has no idea of how much, by whom or when water is used. With the exception of Kaiser, the individual users maintain no records. Thus, by means of lax administrative practices, New Mexico precludes a determination of precise demand and actual beneficial use. New Mexico did little to aid this Court's

²⁰That argument, of course, is ridiculous. One "fact" which Colorado has stressed throughout this case is that a closed stock and domestic water system could eliminate the waste of over 2,000 acre feet annually (See Reply Brief of the State of Colorado before this Court, May 7, 1982, pp. 51-53). That aspect of Colorado's case is now a reality which New Mexico cannot deny (N.M. Brief, pp. 64-68).

²¹These are matters of great concern in Colorado with regard to which records are kept (Additional Findings, pp. 14-15; Tr. 516-519).

understanding of available supply in the Vermejo River when it refused to participate with Colorado in installing measuring devices at the Colorado-New Mexico border to measure the flow of the Vermejo at that point (Tr. 726, 1119). Colorado nonetheless installed a gauge at the Colorado-New Mexico border and measurements were obtained (Colo. Ex. 5; Tr. 726).

Colorado presented a great deal of evidence regarding uses in, and conservation efforts available to, New Mexico (Colo. Exs. 69, 70; Tr. 851-868, 2556-2592). Many of these matters could, to a large extent, be simply corrected through better water administration. Based upon the evidence the Special Master has suggested "reasonable steps to minimize the amount of diversion that will be required" by New Mexico users.²² Where those conservation measures could be quantified with precision, the Master did so (Report, pp. 18, 20, 21). When quantification was not possible, the Special Master's Additional Findings and the record make clear that important water savings can be made. *See* pages 35-37, *supra*. New Mexico now attacks the Special Master's findings because they are not quantified with mathematical precision. Yet, New Mexico should not be permitted to use its own lack of administration and record keeping to establish its claim that no water can be conserved. That position, if accepted by the Court, would encourage states to obscure their water use practices and needs in order to avoid their duty to help conserve the common supply. Instead, that position should be rejected as an attempt to frustrate the law of equitable apportionment.

²²The evidence regarding Colorado's uses demonstrates that efficiency and conservation are built into those uses (Additional Findings, pp. 21, 22; Tr. 508-523, 563-565, 609, 712, 738, 746, 798; Colo. Exs. 13, 15). Because a severe water shortage exists in the Purgatoire Valley in Colorado, highly efficient uses, ranging from 60-75% efficiency, have been designed (Additional Findings, p. 21).

B. Closed domestic and stockwater system.

The waste of over 2,000 acre feet of water annually by the District can now be eliminated by the closed stock and domestic water system and that amount left in the reservoirs (N.M. Ex. E-3). This savings, standing alone, will offset the effects of a Colorado diversion of 4,000 acre feet annually. The reason that the saving of approximately 2,000 acre feet in the reservoirs will offset a Colorado diversion of 4,000 acre feet is as follows. There is a 10% loss in the District canals from the Vermejo River to the reservoirs and an evaporation loss of 25% from the two main reservoirs fed by the Vermejo River (Tr. 1271, 1286; Colo. Exs. 69, 70, 71; N.M. Ex. F-29). There is also approximately a one-third loss of water from the District reservoirs to the farm headgates (Tr. 1315). In total, there is a loss of approximately two-thirds of the water from the River to the farm headgates; i.e., one-third from the River to the reservoirs and an additional one-third from the reservoirs to the farm headgates (Colo. Exs. 69, 70, 71). A depletion of 4,000 acre feet of water at the River, resulting from Colorado's diversion, therefore, would mean a loss of approximately 1,300 acre feet at the farm headgates, i.e., one-third of 4,000. The savings of 2,000 acre feet at the reservoirs as a result of the closed stockwater system provides an additional 1,300 acre feet at the farm headgates, i.e., two-thirds of 2,000. This makes the saving of 2,000 acre feet at the reservoirs the approximate equivalent of 4,000 acre feet at the River and would wholly offset the effects of a Colorado diversion (Colo. Exs. 69, 70; Tr. 2556-2592).

The District's closed stockwater system was not only essential to eliminate a wasteful use of the District water, but it was eminently feasible both from the engineering and economic standpoints, as demonstrated by New Mexico Exhibit E-3, by testimony of witnesses such as Mr. Knox, the chairman of the District board of directors (Tr. 2766-2774) and by New Mexico's Brief at pages 64-68. Furthermore, it has benefits above and beyond the elimination of the waste of nearly 2,000 acre feet of water

annually. The benefits include the availability of stockwater twelve months out of the year rather than nine and one-half months and the furnishing of domestic water. These savings in water and benefits in services will cost only \$12 to \$25 per month for each user (N.M. Ex. E-3).

The Special Master recognized that, while the District users benefit from the domestic water supply and year-round stockwatering system, the District should not retain all the water saved by the installation of that system because they had simply eliminated a wasteful practice (Additional Findings, p. 20).²³ This logic extends to the other conservation measures in New Mexico and, as a matter of policy on interstate streams, this reasoning is essential. To hold otherwise would permit a water user to gain an equity from waste, nullify the "duty to conserve" water and remove any incentive which a state would have to eliminate waste. However, as this Court has said, "wasteful and inefficient uses will not be protected," and the Special Master was correct in not protecting such uses. *Colorado v. New Mexico*, 103 S. Ct. at 546.

In any event, the Special Master has determined that New Mexico users already have a water supply sufficient to satisfy their historic demands (Additional Findings, pp. 11, 28). Thus, New Mexico's claim to all of the water which is saved as a result of reasonable conservation measures is not based upon any need for that water. Rather than recognize that Colorado has a right to its equitable share of the water in the Vermejo River, New Mexico has argued, in effect, that Colorado should subsidize wasteful and inefficient uses in New Mexico. See generally N.M. Brief, pp. 56-68. New Mexico claims that the water saved by conservation, particularly by the

²³The Special Master correctly noted that the District has a sufficient supply of water to satisfy its existing uses. See discussion at pp. 18-23, *supra*.

District's closed stockwater system, which eliminated a 98% wasteful use, should be awarded to New Mexico (N.M. Brief, pp. 64-68). To arrive at this conclusion, New Mexico ignores its duty to eliminate waste to conserve the common supply, and assumes that a corollary to the duty to eliminate waste is the right of the user who discontinues the wasteful practice to a superior water right in the water previously wasted. New Mexico is wrong.

In all of the states which embrace the doctrine of prior appropriation, a beneficial use is the measure of the water right and no rights are acquired by wasteful use. *See e.g., Weibert v. Rothe Bros., Inc.*, 618 P.2d 1367, 1371 (Colo. 1980); *Jicarilla Apache Tribe v. United States*, *supra*; *State ex rel. Erickson v. McLean*, *supra*; *Wyoming v. Colorado*, 259 U.S. 419 (1922). This Court has also held that in the context of equitable apportionment of interstate streams, upon each state is imposed a duty to eliminate waste. *Colorado v. New Mexico*, 103 S. Ct. at 546-547. The rationale underlying the conservation duty is that by eliminating waste, New Mexico does not acquire a right to the water saved. Instead, New Mexico is entitled to maintain its historic level of water use while the water which New Mexico has previously wasted is available for apportionment between the states.

C. Stockpond depletions.

The gratuitous and unwarranted attacks on the Special Master by New Mexico continue with respect to stockpond depletion. Although New Mexico devotes a great deal of discussion to the stockponds (N.M. Brief, pp. 76-80), it apparently fails to realize that the Special Master to a large extent found in its favor concluding that such uses were both necessary and beneficial. On this point, the Special Master found, "Reduction and/or regulation [of stockponds] of some type could not help but be an effort, however small, to conserve the water supply and put it to beneficial use." (Additional Findings, p. 18.)

The extent to which reasonable conservation measures in Colorado might eliminate waste and inefficiency in the use of water from the Vermejo are discussed in the following section.

V. THE PRECISE NATURE OF THE PROPOSED COLORADO USE OF VERMEJO WATER AND THE BENEFITS THAT WOULD RESULT FROM A DIVERSION BY COLORADO WERE ESTABLISHED BY CLEAR AND UNCONTRADICTED EVIDENCE.

On remand the Special Master was directed to make additional factual findings on the precise nature of the proposed interim and ultimate uses of Vermejo River water in Colorado and the benefits that would result from such a diversion to Colorado. In response, the Special Master found that the interim use would be the irrigation of 2,000 acres with "[p]lans to use and reuse the water as it flows down the valley result[ing] in a high efficiency expectation." (Additional Findings, p. 22.) He noted the permanent uses would be power generation, timber operation, washing of coal from coal mines which would save on the transportation of waste material, domestic and recreational uses, and the supplementation of an inadequate water supply in the Purgatoire River basin in Colorado (*Id.*, at 22, 24). The Special Master wisely noted the difficulty of his task because of the "speculative nature of benefits to be experienced by one not currently using the water" and the "natural reluctance to spend large amounts of time and money developing plans, operations and cost schemes." (*Id.*, at 23.) This Court recognizes that there must be a degree of speculation in the assessment of benefits from future uses and further recognizes that this feature will not preclude the award of water for future uses. *Colorado v. New Mexico*, 103 S. Ct. at 547. On the basis of all of the testimony on these subjects, the Special Master concludes that "the benefits to be experienced by Colorado upon the development of Vermejo River water are substantial." (Additional Findings, p. 23.)

The Special Master's Additional Findings are fully supported by the evidence. Under Colorado law, the Vermejo River water, once diverted into the Purgatoire drainage, is treated as imported water. Imported water is not subject to the usual limitation that a water user may make only one use of the water and then must let it return to the stream. See e.g., *Pulaski Irr. Ditch Co. v. City of Trinidad*, 70 Colo. 565, 203 P. 681 (1922). Instead, the importer of the water is entitled to make a succession of uses of the water so long as its volume can be distinguished from the volume of the stream system into which it is introduced. C.R.S. 1973, § 37-82-106(1) (1982 Supp.). The purpose of this rule is to encourage maximum use of the imported water and minimize the need to import additional supplies. *City & County of Denver v. Fulton Irr. Ditch Co.*, 179 Colo. 47, 506 P.2d 144 (1973). The record shows that the Colorado users intend to take advantage of this right to efficiently use the Vermejo water by making a succession of uses (Colo. Exs. 13, 15).

When the water is first released into the Purgatoire drainage, it will be captured in a reservoir. This reservoir will allow Colorado to conserve water and efficiently regulate its releases to ensure maximum beneficial use. On an interim basis the water will be beneficially used for irrigation in the upper reaches of the Purgatoire River Valley where approximately 2,000 acres of land would be irrigated (Colo. Ex. 13, pp. 6-9; Colo. Ex. 15, pp. 21-24; Tr. 796). Water would be used and reused from lands in the upper valley to lands in the lower valley. The efficiency of this water use would be between 61-75% (Tr. 746; Colo. Ex. 13, pp. 6-9; Additional Findings, p. 21). The ultimate uses of water would be (1) to supplement an inadequate supply of water available for existing Colorado uses, a point emphasized by the Colorado State Engineer and by officials from the City of Trinidad and Purgatoire River Water Conservancy District and CF&I (Tr. 535, 536, 537, 603, 604, 623, 624, 639, 641, 642, 652, 656, 664, 673, 674, 675, 711, 784, 796); (2) to operate a power plant, with electricity

generated by this facility being used to supplement existing power sources in the upper Purgatoire Valley (Colo. Exs. 13, 15; Tr. 744), and to provide electrical power to a sawmill which would supply timbers for mining operations (Colo. Exs. 13, 15; Tr. 742); (3) to provide water for industrial, domestic and reclamation purposes at two coal mines presently existing and two additional mines to be opened; (Tr. 739, 740, 741; Colo. Ex. 13); (4) to wash coal coming from these mines and separate waste materials, thereby significantly reducing the cost of transportation (Tr. 738; Colo. Exs. 13, 15); (5) to supply domestic needs which will increase as a result of industrial development (Tr. 747; Colo. Ex. 13); (6) to provide for synthetic fuel development (Tr. 663, 664, 672; Colo. Exs. 13, 15). The specific benefits which will result are the supplying of the aforementioned uses, including the alleviation of water shortage in the Purgatoire Valley and the stimulation of the economy of Las Animas County, Colorado, which is economically "substandard" or "depressed" in comparison with the rest of the state (Tr. 640, 641, 816, 817; Colo. Ex. 15). An analysis of these uses is clearly and specifically set forth in Colorado Exhibit 13 and the benefit analysis is clearly and specifically set forth in Colorado Exhibit 15. These exhibits fully support the Special Master's findings that the harm, if any, to New Mexico users is clearly outweighed by the benefits to be derived from the proposed Colorado uses (Additional Findings, p. 24-28).

New Mexico criticizes the Special Master saying "he makes no findings showing the precise nature of the contemplated uses of Vermejo water in Colorado or any benefits therefrom that would outweigh injury to New Mexico." (N.M. Brief, p. 82.) New Mexico then says that the Special Master's "report would enable Colorado to accomplish what the Court has sought to prevent — an award of water for undetermined future uses for which only speculative or unproved benefits could be attributed." (N.M. Brief, p. 83.)

The Special Master did provide in his Additional Findings as well as in his Report "the precise nature of the proposed interim and ultimate use in Colorado" and he did describe and find substantial the benefits that would result from a diversion to Colorado (Additional Findings, p. 22-24). All of this was done after he had found that by conservation, including water administration as efficient as that in Colorado, any harm to New Mexico would be precluded. (*Id.* at 21, 29.) New Mexico in its inordinate criticism of the Special Master seizes on the word "precise" in this Court's specification of this item and implies that that calls for a minutely detailed description of a particular activity in terms of engineering and financial analyses. Indeed there were such analyses to a very considerable extent in Colorado Exhibits 13 and 15. This Court said, however, that the findings under this item should look to the "precise nature" of the proposed uses. *Colorado v. New Mexico*, 103 S. Ct. at 549. New Mexico overlooks the word "nature." This is what this Court requested and this is what the Special Master did define, the nature of the uses that would be accomplished in Colorado, recognizing that such detail as would come with the actual diversion and use of the water could not be furnished at the present time.

New Mexico attempts to exploit the fact that Colorado does not have any present uses of Vermejo water which would make possible a "precise" determination of benefits. However, it must be remembered that the New Mexico interests have prevented the Colorado water right holder from utilizing Vermejo water by enjoining any such use in *Kaiser Steel, et al. v. CF&I*, No. 76-244 (D.N.M. 1976).²⁴ Thus, the standard posited by New Mexico is impossible to comply with. It alleges Colorado must have defined with absolute precision all aspects of its future use. It would have Colorado do so in the face of a binding court order that the Colorado interests not divert

²⁴When Colorado attempted to obtain a negotiated resolution of the Vermejo River water allocation by interstate compact, New

water. This cart-before-the-horse approach may appear to them to be a useful litigation strategy, but it is not the standard contemplated by this Court.

VI. THE ADVERSE EFFECTS, IF ANY, OF COLORADO'S DIVERSION WILL BE MINIMAL AND CAN BE OFFSET BY REASONABLE CONSERVATION EFFORTS IN NEW MEXICO AND COLORADO.

The Special Master's analysis and factual findings on the fifth and final area in which this Court requested additional findings are complete and straightforward. *Colorado v. New Mexico*, 103 S. Ct. at 549. His conclusions flow logically from his findings in the previous portion of his Additional Findings (Additional Findings, pp. 24-26).

Beginning with the premise that the effects, if any, of a Colorado diversion would be felt almost entirely by the District,²⁵ the Special Master correctly points out that the District is the New Mexico user which can most easily insulate itself from those effects: through effective use of its system of reservoirs, development of its alternate water supplies and employment of reasonable conservation measures (Additional Findings, p. 27). See *Wyoming v. Colorado*, *supra*.

²⁴Continued

Mexico, after participating in discussions for a day, terminated those discussions with the statement that "it would be inappropriate and not in the long-term interest of comity for us to encourage the continuation of these negotiations" and that "we [the New Mexico State Engineer and his associates] have concluded that we must recommend to the Interstate Stream Commission at our meeting on June 3 that these negotiations be terminated" (Colo. Ex. 53).

²⁵To avoid this conclusion New Mexico must repudiate the testimony of its primary expert witness at trial, Mr. Mutz (N.M. Brief, pp. 37, 101-104). His testimony (Tr. 1246, 1323, 1379) was corroborated by other evidence (Colo. Ex. 5, pp. 6-10; Colo. Exs. 67, 68, 69, 70).

The testimony of Mr. Mutz and the monthly flows at the Dawson gauge support the Special Master's conclusion that the District would be the only New Mexico user that could be affected by Colorado's diversion. Those figures establish that the months when Colorado could physically divert water from its diversion points are the months when the flow of water in the Vermejo is the greatest.²⁶ See also discussion of available supply at pages 10-11, 27-30, *supra*. Because Colorado can divert less than one-third of the measured flow at the Dawson gauge (Additional Findings, p. 25), and because the maximum legitimate demand by Vermejo Park, Kaiser, Phelps Dodge and the individuals diverting from the Vermejo canal is only about 1,405 acre feet of water for an *entire year*, the River will obviously have sufficient water to satisfy those demands (Colo. Exs. 68, 69).²⁷

The fact that the District has not fully utilized the water available in its reservoirs and has the ability to conserve an additional 2,000 acre feet of water at the reservoirs (or the equivalent of 4,000 acre feet at the District headgate) means the District will be able to offset any adverse effects of the Colorado diversion and maintain the level of irrigation it has developed during the last 30 years, even after the Colorado diversion (Colo. Exs. 5 at Tbl. 6, 69, 70; N.M. Exs. F-23, F-24; Additional Findings, pp. 20-21; N.M. Brief, pp. 64-68). Through use of

²⁶Water will be diverted by Colorado from Ricardo, Fish and Little Vermejo Creeks at elevations ranging from 9,920 feet to over 10,000 feet in elevation. "Because of freezing conditions during the winter season, it is anticipated that Colorado diversions would take place only during mid-April through mid-October." (Colo. Ex. 5, pp. 3, 5.)

²⁷New Mexico's discussion at page 102 of its Brief, and New Mexico Exhibit F-33, assume that Colorado will divert nearly all of the flow in the Vermejo at the Colorado-New Mexico border. Colorado's diversions are upstream from that point and can capture at most one-half of the Colorado production (Additional Findings, p. 26; Colo. Exs. 5, 6).

its reservoirs, the District can carry over water and even out the high and low flow years and thereby achieve a maximum utilization of existing storage.

New Mexico's criticism of the Special Master's findings and prediction of "substantial" injury are predicated upon incorrect assumptions and assertions which find no support in the record (N.M. Brief, pp. 90-109). New Mexico argues that the Special Master's recommendations will reduce the acreage which the District has irrigated by 3,897.87 acres (N.M. Brief, p. 90). That figure apparently refers to the difference between the number of acres which the District is permitted, by contract, to irrigate, and the number of acres which the District has historically irrigated (N.M. Ex. F-37). New Mexico implies that the Special Master has looked only to the 1970's, when the District irrigated an average of 4,147.4 acres annually, to calculate the acreage historically irrigated by the District. However, it was not only during the 1970's that the District failed to irrigate all of the acreage which it could have irrigated. During the 1960's and the 1950's, periods for which no claim of "drought" is made by New Mexico, the District irrigated an average of only 4,573.8 acres and 4,453.2 acres, respectively; far less than the allowed 7,379 acres. The Special Master has not "reduced" the acreage irrigated by the District, he has only confirmed its practices over the past three decades.

The "economic" report (N.M. Ex. F-33) and testimony on which New Mexico bases its predictions of financial disaster to Colfax County were incredible, and were rightly rejected by the Special Master (Additional Findings, p. 27). New Mexico's economic report provides no basis for its discussion of the economic consequences in New Mexico of a diversion of Vermejo River water in Colorado (N.M. Ex. F-33; N.M. Brief, pp. 98-102, 107, 108). As its basic premise, the report assumed that Colorado would divert the *entire* flow of the Vermejo River (Tr. 2305, 2313-2314). However, Colorado would divert less

than one-half of the water which it produces, and only approximately one-fourth of the Vermejo River's virgin flow, and could not affect the flow in the New Mexico tributaries to the Vermejo River or in the Chico Rico system. This point is dealt with succinctly by the Special Master:

Finally, New Mexico presents an impressive array of figures allegedly representing the economic injury resulting from reduced water supply. However, for the most part these figures presuppose that no Vermejo River water is available for New Mexico users, and such is not the case even if New Mexico does not implement any additional conservation measures. Colorado would be diverting less than one-half of the water it, as a state, produces. New Mexico users of Vermejo water are not suddenly faced with a dry riverbed; water still flows through New Mexico in the Vermejo River and its tributaries.

(Additional Findings, p. 27.)

Additionally, the economic report acknowledges that its analysis of the relation between the Vermejo River and the economy of Colfax County is speculative, stating:

It is difficult to determine in an exact manner just how much of the employment and income reported above for Colfax County occur in the Vermejo watershed or are dependent upon economic activity within the watershed. There are simply no standardized statistics that are reported for that subregion of the county economy.

(N.M. Ex. F-33, p. 27.)

The report is unreliable and provides no basis for concluding that the New Mexico users will be materially harmed by a Colorado diversion.

VII. SUGGESTED TERMS AND CONDITIONS TO PROMOTE SHARING THE COMMON SUPPLY IN THE EXERCISE OF COLORADO'S EQUITABLE SHARE OF THE VERMEJO RIVER.

The Special Master affirmed his original recommendation that Colorado be allocated 4,000 acre feet per year from the Vermejo River (Additional Findings, p. 29). He has found on the basis of clear and convincing evidence that injury to New Mexico "... as a result of this diversion is nonexistent or could easily be offset by reasonable conservation measures." *Id.* In the interest of renewed interstate comity, Colorado suggests that conditions could be placed on its use of Vermejo River water to ensure the most equitable sharing of the common supply and to dispel any possibility that Colorado's diversion would cause injury to New Mexico or its users.

Colorado suggests that its diversion of water from the Vermejo River watershed in Colorado be limited to points at or above those three points decreed in the Colorado water adjudication proceeding (Colo. Exs. 9, 10). These three points of diversion are as follows:

A point on the north bank of Ricardo Creek in unsurveyed Township 35 South, Range 70 West of the 6th P.M., Costilla County, Colorado, from whence a monument on the Colorado-New Mexico State Line marked Mile 119 bears S 14°13'18" E, a distance of 11607.33 feet.

A point on the north bank of Little Vermejo Creek in unsurveyed Township 35 South, Range 70 West of the 6th P.M., Costilla County, Colorado, from whence a stone marked XXII being on the line common to Costilla and Las Animas Counties bears S 52°14'52" E, a distance of 5480.12 feet.

A point on the north bank of Fish Creek in unsurveyed Township 35 South, Range 69 West of

the 6th P.M., Las Animas County, Colorado, from whence a stone marked XXII being on the line common to Costilla and Las Animas Counties bears S 21°10'23" W, a distance of 8509.37 feet.

Approximately one-half of the Vermejo River drainage in Colorado lies below these decreed diversion points (Colo. Ex. 5, Tbl. 1). New Mexico, using the period of 1950 to 1978, found that approximately 3,650 acre feet of water was annually available at Colorado's decreed points of diversion (Tr. 1322-1324). These figures reveal that in some years, less than 4,000 acre feet of water would be available at these points for diversion by Colorado even though sufficient water would be available in Colorado to supply the entire apportionment most years (See Colo. Ex. 5, Tbls. 4, 5).

Therefore, as a corollary to the limitation that Colorado may divert Vermejo River water only at or above the decreed points of diversion, Colorado's diversion should be calculated on the basis of a ten-year progressive average, as was done in *Nebraska v. Wyoming*, 325 U.S. 589 (1945), and as is used in Article III(D) of the Colorado River Compact for measuring deliveries from the Upper Basin states to the Lower

et seq. Under this condition Colorado would be allowed to take an amount of water each year that would result in an average diversion of no more than 4,000 acre feet of Vermejo River water per year for any period of ten consecutive years reckoned in continuing progressive series commencing with the first year in which Colorado diverts water.

Use of a ten consecutive year progressive average is a necessary compliment to the suggested limitation on Colorado's points of diversion. As indicated, Colorado, in certain years would receive less than 4,000 acre feet

apportioned to it. Although Colorado might, in some years, divert more than 4,000 acre feet of water, such a diversion could only occur in those years in which Colorado's total contribution to the Vermejo River system was higher and generally more water would also be available to New Mexico users (*Compare Colo. Ex. 5, Tbl. 4 and Colo. Ex. 5, Tbl. 5*).

The manner in which Colorado suggests that it divert an annual average of 4,000 acre feet from the Vermejo River is intended to afford greater protection for downstream users and demonstrates that Colorado is willing to share the burden of drier years if allowed to share in the benefits of wetter years. By diverting less than 4,000 acre feet in some years and by taking more than 4,000 acre feet water only in years of plenty, Colorado will receive its equitable share of the Vermejo River and assure a minimal impact on New Mexico's users.

CONCLUSION

The Special Master concluded that Colorado is entitled to utilize a portion of the water of the Vermejo River. This conclusion was reached on the basis of a complete and adequate record, which was the result of sixteen days of trial, extensive testimony and over 200 exhibits. New Mexico seeks to discredit this conclusion, not by dealing with the record, but by criticizing the findings of the Special Master and by the presentation of charts and tables which inaccurately represent the Special Master's findings and the evidence presented at trial.

Colorado respectfully submits that the findings of the Special Master are supported by clear and convincing evidence. Colorado further submits that its claim for an equitable share of the waters of the Vermejo River is of serious magnitude. It has shown, likewise by clear and convincing evidence, that without a diversion of 4,000 acre feet of water in Colorado, New Mexico will be using

more than its equitable share of the water of the Vermejo River because the benefits to Colorado from such a diversion will substantially outweigh the possible harm to New Mexico and because reasonable conservation measures by New Mexico will more than offset the loss of water, if any, resulting from Colorado's diversion. Therefore, the recommendation of the Special Master should be affirmed.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Robert F. Welborn, certify that I am a member of the bar of this Court and that on September 22, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be mailed the requisite number of copies of the foregoing Colorado's Brief In Reply To The Exceptions And Brief Of The State Of New Mexico, by first class mail, postage prepaid, to the following officials of the State of New Mexico:

The Honorable Toney Anaya
Governor of the State of New Mexico
State Capitol
Santa Fe, New Mexico 87503

The Honorable Paul G. Bardacke, Esq.
Attorney General of the State of New Mexico
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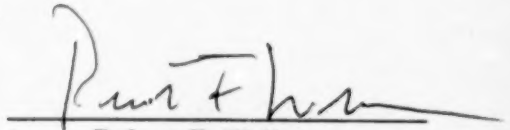
I certify that on September 22, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be served by express mail, postage prepaid, the requisite number of copies of the foregoing Colorado's Brief In Reply To The Exceptions And Brief Of The State Of New Mexico on the following counsel of record:

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I certify that all parties required to be served have
been served.

A handwritten signature in dark ink, appearing to read "Robert F. Welborn", is written over a horizontal line.

Robert F. Welborn
Special Assistant Attorney General

No. 80, Original

Office - Supreme Court, U.S.

FILED

OCT 24 1983

ALEXANDER L. STEVAS,
CLERK

IN THE
Supreme Court of the United States

OCTOBER TERM, 1983

STATE OF COLORADO, *Plaintiff*

v.

STATE OF NEW MEXICO
AND PAUL G. BARDACKE,
ATTORNEY GENERAL OF THE STATE OF
NEW MEXICO, *Defendants*

NEW MEXICO'S
MOTION FOR LEAVE TO FILE REPLY BRIEF
AND
NEW MEXICO'S REPLY BRIEF

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October 24, 1983

No. 80, Original

IN THE
Supreme Court of the United States

OCTOBER TERM, 1983

STATE OF COLORADO, *Plaintiff*

v.

STATE OF NEW MEXICO
AND PAUL G. BARDACKE,
ATTORNEY GENERAL OF THE STATE OF
NEW MEXICO, *Defendants*

**NEW MEXICO'S MOTION FOR LEAVE
TO FILE REPLY BRIEF**

COME NOW the defendants, State of New Mexico and Paul G. Bardacke, Attorney General of New Mexico, pursuant to Rules 9.2 and 9.6 of the Rules of the Supreme Court of the United States, and request the Court for leave to file the attached Reply Brief. In support thereof, New Mexico states:

1. The State of New Mexico filed its Exceptions to the Report of Special Master and Brief in Support of Exceptions with the Court on August 11, 1983. The State of Colorado filed its Brief in Reply to the Exceptions and Brief of the State of New Mexico on September 22, 1983.
2. Colorado's Reply Brief takes exception to the Special Master's Report of May 31, 1983, by urging the Court to

alter the Master's Report with respect to Colorado's recommended diversion right despite waiving its right to take exception on July 14, 1983.

3. In its Reply Brief Colorado distorts certain facts in evidence, misconstrues certain exhibits, and criticizes New Mexico's presentation of supply and demand on the basis of assertions which are incorrect and prejudicial.

4. A decision of this Court based upon the assertions recited in Colorado's brief would be highly injurious to established property interests in New Mexico and to the livelihood of New Mexico's citizens.

WHEREFORE, the State of New Mexico respectfully moves the Court for leave to file the attached Reply Brief of the State of New Mexico.

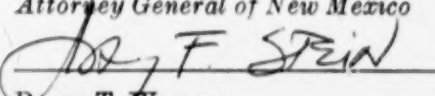
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STATE OF COLORADO, *Plaintiff*

v.

STATE OF NEW MEXICO
AND PAUL G. BARDACKE,
ATTORNEY GENERAL OF THE STATE OF
NEW MEXICO, *Defendants*

NEW MEXICO'S REPLY BRIEF

INTRODUCTION
AND
SUMMARY OF ARGUMENT

This brief is made necessary by Colorado's treatment of critical factual issues in its Brief in Reply to the Exceptions and Brief of the State of New Mexico (hereinafter Colorado Brief). The Court's opinion following the first phase of this case emphasized the need for a complete analysis of the factual questions pertaining to water supply and demand on the Vermejo River. The case was remanded to the Special Master for comprehensive factual findings. —U.S.—, 103 S.Ct. 539, 545 (1982).

Two factors are predominant. In submitting its Reply Brief, Colorado has proposed that the Court increase the

Special Master's recommendation despite having waived its right to do so. This would alter equitable considerations relied upon by the Special Master in his second Report (hereinafter Report of May 31, 1983).¹ More importantly, Colorado has obscured both New Mexico's actual demand as well as the supply of Vermejo water available to satisfy that demand. A full discussion of this question is essential to any evaluation of New Mexico's needs or injury to New Mexico's interests caused by diversions by C. F. & I. Steel Corporation from the Vermejo tributaries in Colorado. The Court must have the facts fully developed to reach a decision.

POINT I

COLORADO'S "SUGGESTED TERMS AND CONDITIONS TO PROMOTE SHARING THE COMMON SUPPLY" TAKE EXCEPTION TO THE SPECIAL MASTER'S REPORT AND CONSTITUTE AN ATTEMPT TO OBTAIN MORE WATER THAN IS RECOMMENDED BY THE SPECIAL MASTER.

The Special Master recommended that Colorado be awarded 4,000 acre-feet of Vermejo River water per calendar year. Report of December 31, 1981 at 22-24; Report of May 31, 1983 at 29. Colorado expressly waived its right to take exception to this recommendation. *See* letter of July 14, 1983, from Robert Welborn to Alexander Stevas. Notwithstanding its waiver, Colorado now asks the Court to increase the Master's award by adopting a ten year progressive average, which would permit Colorado to compensate for the effects of dry years by increasing diversions in wet years. Colorado Brief at 54-56.

¹ The Master's first Report is cited as Report of December 31, 1981.

Colorado states that its suggestion is being made in the interest of "renewed interstate comity," demonstrating that it is willing "to share the burden of drier years if allowed to share in the benefits of wetter years." *Id.* at 54, 56. In reality, Colorado is suggesting that the Court alter the Master's Report to allow Colorado to take considerably more water than the Master recommended. Colorado's proposal, if applied during the 25 year period of record 1955-79, would increase the Master's award by 14%.

At trial, Colorado represented that an average of 4,702 acre-feet annually was available for diversion at C.F.&I.'s proposed points of diversion. Colo. Ex. No. 5. Tbl. 5. New Mexico's evidence showed that an annual average of approximately 3,650 acre-feet was available. Tr. 1322-24. Colorado assured the Master that its proposed diversions would take less than half of the water produced in that state, with the remainder available to satisfy New Mexico's uses. *See, e.g.*, Colorado's Reply Brief of July 17, 1981, Appdx. A at 14. The Master accepted these estimates, finding that New Mexico would be able to use the inflow below the points of diversion. Report of May 31, 1983 at 29.

Colorado now urges the Court to permit it to take more than would have been possible under the annual 4,000 acre-foot limit recommended by the Master. Because less than 4,000 acre-feet would be available in some years, Colorado proposes that its "diversion should be calculated on the basis of a ten-year progressive average. . . ." Colorado Brief at 55. According to Colorado's evidence the average amount of water at the proposed diversion points in the 1970s was 3,495 acre-feet per year, with an average supply of only 2,322 acre-feet in six years.² Colorado Ex. No. 5,

Tbl. 5. Aware of this shortage, Colorado is now requesting the Court to allow it to mitigate the deficit by taking more water in years when there are more than 4,000 acre-feet available at the diversion points.

Under Colorado's proposal, C. F. & I. would have dried up the river at its diversion points in each and every year in the 1970s. This would reduce the dependable snowmelt runoff by over one-half, leaving the New Mexico users with the summer flood-water, much of which is not divertible, and creating precisely the injury described in New Mexico's Brief in Support of Exceptions at Point VI.

POINT II

THE EXCLUSION OF EVIDENCE ON THE SUPPLY OF VERMEJO WATER TO RIGHTS ON THE CANADIAN RIVER WAS PREJUDICIAL TO NEW MEXICO.

In its Reply Brief, Colorado claims that the Special Master did not commit error by declining to hear the evidence described in New Mexico's Amended Narrative Tender of Evidence. The tender addressed four points: completion of the Vermejo Conservancy District's closed stockwater system, stockpond depletions, flood flow contributions to the Canadian River from the Vermejo, and the difference between basin discharge and practicably

² The average amount of water produced in the 1960s was 4,846 acre-feet. When it comes to assessing the water supply in New Mexico, Colorado refuses to recognize the drastic drop in supply in the 1970s. In assessing C. F. & I.'s potential supply, however, Colorado acknowledges and seeks to compensate for the drought of the 1970s by requesting the Court to adopt the ten year progressive average.

divertible supply. Colorado argues that this evidence is either cumulative of evidence in the record or that the Master's ruling was not prejudicial to New Mexico. Colorado Brief at 5.

The completed stockwater system and stockpond depletions are discussed in Point IV, *infra*. With respect to contributions from the Vermejo River to the Canadian River, Colorado contends that New Mexico's evidence has little relevance to the case because these flood flows do not originate in Colorado. *Id.* at 6. The evidence shows that flows originating in Colorado form part of the flood flows which pass the District's headgates. The Vermejo tributaries in Colorado and the Vermejo River in New Mexico are perennial streams. Colo. Ex. No. 5; N.M. Ex. No. A-130; A-1 through A-79. Diversions from the tributaries in Colorado would therefore necessarily reduce the flood flows into the Canadian River to the detriment of rights on the Canadian River senior to the proposed diversions of C. F. & I. Tr. 1378.

New Mexico's tendered evidence would demonstrate the extent of flood flows based upon records from a stream-flow gauge installed in 1980. It was tendered in response to Colorado's erroneous assertion, adopted by the Master, that the Vermejo is virtually a "closed system," from which "little, if any, of the water of the Vermejo reaches the Canadian River." Report of December 31, 1981 at 2. New Mexico's tender was rejected by the Master despite his assertion that a major difficulty in the fact finding process was "the lack of reliable streamflow measurements." *Id.* While Colorado argues that the record supports the Master's conclusion that "the effect of a diversion in Colorado on those who live below the Vermejo Conservancy District would be negligible and virtually non-

existent," New Mexico's tendered evidence would show that in the two years of record, 12,000 acre-feet of flood flows spilled past the District's diversion works and were available for appropriation by rights on the Canadian River. Amended Narrative Tender of Evidence at 2-4. Tr. 1040-56, 1131-32, 2218-36; N.M. Ex. Nos. G-3 through G-8, G-10, G-15, G-28, G-30, G-31.

The tendered evidence also demonstrates that Colorado's argument that all basin discharge is "available" for diversion from the Vermejo in New Mexico, an argument adopted by the Master in assessing the supply and demand, is unquestionably erroneous. While the tendered evidence is cumulative of opinion testimony on the subject, it contains the only actual measurements of basin discharge and actually divertible Vermejo River water by Vermejo Conservancy District diversion.

POINT III

COLORADO'S ATTEMPT TO REFUTE THE FACT THAT THE VERMEJO SUPPLY DID NOT MEET THE DEMAND BY NEW MEXICO'S USERS IN THE LATE 1960s AND THE 1970s RELIES ON A MISLEADING USE OF AVERAGE FIGURES.

Colorado attempts to rehabilitate the Master's Report by arguing that we "overstate the acres irrigated, overstate the amount of water needed, and understate the water supply," resulting in a "deceptive, greatly exaggerated" accounting of demand, and that the Master did not utilize average annual flows in reaching his conclusions. Colorado Brief at 28. Colorado is demonstrably wrong.

Demand for Vermejo Water

In his Additional Factual Findings the Master surmised that "an average of 10,900 acre-feet at Dawson gauge would seem to provide a fair amount of available water, and more than enough to supply the current uses below the gauge." Report of May 31, 1983 at 11. In our brief we demonstrated that the evidence shows that the demand for Vermejo water below Dawson, exclusive of the demand of Canadian River users, is 17,000 acre-feet per year. New Mexico Brief at 14-35.

Colorado attacks the record in five ways, the most outspoken of which relates to duty of water. By arguing that the Vermejo Conservancy District's adjudicated duty of 1.5 acre-feet per acre per year is its "maximum" entitlement and "represents the greatest amount of water ever required to grow a crop without waste," Colorado asserts that we have converted "this measure of maximum need into the measure of minimum supply. . . ." Colorado Brief at 22.

Colorado makes no reference to the record in its argument with respect to duty. To understand duty, the Court must first distinguish between maximum entitlement under a court decree and the calculation of the amount of water it takes to grow crops per acre per year. The duty of water in New Mexico is adjudicated on the basis of average cropping pattern, average climatic data, and average farm irrigation efficiency. The calculated duty, in other words, is not "the greatest amount of water ever required to grow a crop," as Colorado argues, but is an *average* requirement. Using a similar methodology, the Bureau of Reclamation calculated the average farm delivery requirement (duty) in the District to be 1.73 acre-feet per acre

per year. The Bureau calculated the maximum annual duty for District lands at 2.20 acre-feet per acre. N.M. Ex. No. C-2.

In the Vermejo River decree the adjudicated duty of water is 2.0 acre-feet per acre, *i.e.*, less than the maximum duty computed by the Bureau, for all of the water users except the farmers in the Vermejo Conservancy District. Their adjudicated duty was reduced even more, *i.e.*, to 1.5 acre-feet per acre. The adjudicated duty, in other words, is considerably below the average requirement and is by no means the "greatest" water need that Colorado ascribes to the average demand below Dawson of 17,000 acre-feet per year.³

With regard to the fact that 1.5 acre-feet per acre per year is the maximum entitlement under the adjudication decree, albeit that it defines less than average need, Colorado argues that the District's farmers have not used available water. Colorado Brief at 23. Colorado can find no support in the record, however, for its conclusions. In combination with decreed acreage, duty limits the total amount of water an appropriator can apply in a year under New Mexico law; *e.g.*, 100 acres adjudicated at 1.5 acre-feet per acre sets a maximum delivery at the farm headgate of 150 acre-feet per year. Limited always by beneficial use, the entitlement can be used for high water use demand crops, low demand crops, or the average cropping pattern. In the case of the District, most farmers have a large portion of their acreage in alfalfa and hay, both high demand crops. N.M. Ex. No. C-9. With a limited duty, the irrigation

³ The District's duty of 1.5 acre-feet is based on the bylaws of the Maxwell Irrigation Company, the District's predecessor. The company had created the low duty in an unsuccessful attempt to "spread" the available supply to the 14,620 acres of decreed right, about twice what New Mexico claims to have been diligently developed in this lawsuit.

of high demand crops results in the irrigation of less than the total farm acreage. Also, the District delivers water to its water users in accordance with orders received, limited by the prorations. If water is available only late in, or at the end of, the irrigation season or if local rainfall satisfies the irrigation requirement, the farmer will not order water even though it has been prorated.

Colorado's second assertion is that the District has "settled into an historic water use pattern of irrigating about 4,500 acres annually." Colorado Brief at 18. In an attempt to bury the realities of farming in average figures, Colorado also argues that there could have been no drought in the 1970s because "(i)ronically, the years in which the greatest irrigation occurred are the same years that New Mexico claims the District suffered severe drought." *Id.* at 19. Analytically, Colorado's argument goes no deeper than to point out that the average acreage irrigated was 4,453.2 acres in the 1950s, 4,573.8 acres in the 1960s, and 4,147.4 acres in the 1970s.⁴ Aside from the fact that the crop censuses show as irrigated for the entire year acreage that may have been irrigated only once, the facts in evidence, as opposed to Colorado's averages, explain why the District did not irrigate more in the 1970s than in the previous two decades.

As in every reclamation project, the contract between the United States and the Vermejo Conservancy District established a "development period" or a period of time "required to convert the project from its present economy

⁴ It should be emphasized that Colorado's average acreage comparison is indifferent to the hydrologic information detailing the U.S.G.S. record of flow of the Vermejo from 1916 to the present and showing the drought conditions without contradiction. N.M. Ex. No. F-29; N.M. Ex. Nos. A-1 through A-79.

to one making full use of the proposed water supply from the project to be constructed and rehabilitated." See Contract Between United States and the Vermejo Conservancy District for the Construction, Operation, and Maintenance of the Vermejo Reclamation Project, New Mexico, August 8, 1952 at 5, Colo. Ex. No. 20. Ordinarily, the first repayment of construction costs is due the year following the development period.

The Vermejo Project was completed in 1955, and the original development period was 7 years, *i.e.*, 1955 to 1962. In 1962, the original contract was amended to extend the development period to 10 years or from 1955 to 1965. Colo. Ex. No. 22. As explained by the Commissioner of Reclamation to the Secretary of the Interior, the amendment was needed because of the price-cost squeeze evidenced by the existing national parity ratio of about 80. As can be readily seen from the District's prorrations, the water supply in 1963 was less than 1/3 of what it was in 1962, and in 1964 was only about 13% of what it was in 1962. While the supply in 1965 was about 2/3 of a full supply, each subsequent year through 1979 was a drought year. N.M. Ex. No. F-37. In short, when the development period was about to end, drought severely reduced the water supply, restricting the development even more profoundly than the price squeeze did in the late 1950s and early 1960s.⁵

The third way in which Colorado attacks the supply and demand chart on pages 40-41 of our Brief in Support of Exceptions is the most egregious. Colorado argues:

That exhibit is deceptive. It is taken from New Mexico Exhibit F-37, but omits the important column contain-

⁵ Larger amounts of acreage were irrigated when more water was available, *e.g.*, 6,294 acres in 1969 and 6,262 acres in 1974.

ing the amount of water released for irrigation in each of the years. Thus in 1955, for example, the amount of water actually released to the 3,763 acreage irrigated was 9,225 acre-feet, or 2.45 acre-feet per acre, an amount greatly in excess of the 1.25 acre-feet per acre shown in the brief.

. . .

To arrive at its proration figures in that exhibit, New Mexico divides the amount of water released from the reservoirs by 7,380 acres, the amount which the District is permitted by the Bureau of Reclamation to irrigate, rather than by the amount of acres actually irrigated (Colo. Ex. 33; N.M. Ex. F-37; Tr. 1306, 1308). Since the 7,380 acres have never been irrigated, the New Mexico proration figures shown on the exhibit never correspond to the acreage actually irrigated and understate the amount of water available and released for irrigation (N.M. Ex. F-37). Colorado Brief at 20-21.

New Mexico Exhibit F-37 is reproduced for convenience as Figure 1.

Colorado misconstrues the exhibit. In Figure 1, following each calendar year there are seven columns showing the acreage irrigated in the District, the "full supply" or duty of 1.5 acre-feet, the proration in terms of duty, the anticipated proration in volume of acre-feet, and the shortage to the farms in terms of duty and volume. Colorado selects the fourth column, *i.e.*, the proration in volume of acre-feet, and explains that in our supply-demand chart we omitted "the important column containing the amount of water released for irrigation in each of the years." Colorado then proceeds to state that we arrive at the proration figures by dividing "the amount of water released from the reservoirs by 7,380 acres. . . ." Based on these

Figure 1
VERMEJO CONSERVANCY DISTRICT
WATER PRORATIONS AND SHORTAGES
 1955 - 1979

Calendar Year	Irrigated Acreage ¹	Full Water Supply (Ft.) ²	Annual Water Proration		Shortage to Farm Deliv.	
			Ft. ³	Acre-ft. ⁴	Acre-ft./ Acre	Acre-ft. ⁴
1955	3763	1.50	1.25	9225	.25	1845
1956	4941	1.50	1.38	10185	.12	885
1957	4276	1.50	.67	4945	.83	6125
1958	4602	1.50	1.00	7380	.50	3690
1959	4693	1.50	1.50	11070	0	0
1960	4592	1.50	.50	3690	1.00	7380
1961	6436	1.50	1.00	7380	.50	3690
1962	5869	1.50	1.50	11070	0	0
1963	4244	1.50	.38	2805	1.12	8265
1964	2349	1.50	.11	810	1.39	10260
1965	3218	1.50	1.08	7970	.42	3100
1966	4114	1.50	.60	4430	.90	6640
1967	3902	1.50	.58	4280	.92	6790
1968	4720	1.50	.67	4945	.83	6125
1969	6294	1.50	.33	2435	1.17	8635
1970	5559	1.50	.67	4945	.83	6125
1971	5094	1.50	.08	590	1.42	10480
1972	4912	1.50	.29	2140	1.21	8930
1973	5083	1.50	.58	4280	.92	6790
1974	6262	1.50	.54	3985	.96	7085
1975	5422	1.50	.25	1845	1.25	9225
1976	2063	1.50	.05	370	1.45	10700
1977	665	1.50	0	0	1.50	11070
1978	3016	1.50	.48	3540	1.02	7530
1979	3398	1.50	.50	3690	1.00	7380
Mean	4379	1.50	.64	4720	.86	6350

¹ From: "Water and Land Resource Accomplishments, Statistical Appendix I, U.S. Bureau of Reclamation."

² 1.5 ft./ac. is considered by the District Board to be a full supply.

³ Compiled from Vermejo Conservancy District Water prorations.

⁴ Based on 7,380 acres.

two premises, Colorado argues that we "understate the amount of water available and released for irrigation." *Id.* at 21.

In view of the fact that Colorado was made aware at trial of how each column in Exhibit F-37 was prepared, Colorado's explanation to the Court in its Reply Brief is misleading. Tr. 1305-13. In its brief, Colorado describes the computation backwards.

The annual prorrations in acre-feet per acre shown on New Mexico's Exhibit F-37 and on pages 34-35 of our Brief in Support of Exceptions are taken from the records of the Vermejo Conservancy District. N.M. Ex. No. E-8. The annual prorrations in acre-feet, column 4, are the product of the acre-feet per acre proration and the total project acreage of 7,380 acres. The figures do not represent either water actually delivered or water actually released. The proration represents the amount of water prorated for delivery to the entire acreage in the District. The District's policy is that all users share in available water supply.

The second column in Exhibit F-37 and on pages 34-35 of our brief, showing irrigated acreage, is from crop census data. The District does not tell the farmers how many acres can be irrigated. With the prorrations made at the beginning of the season, an individual farmer may decide to irrigate his entire farm or only a portion thereof, depending on his own assessment of the water supply available for the year. The acreage figures shown in the census result from the farmer's decision on how many acres to irrigate with the prorrations made by the District.

In some years, when a small amount is prorated, the

farmers may irrigate a large acreage at the beginning of the irrigation season with the first proration hoping they will get additional water. If the additional water does not materialize, the acreage is counted as irrigated in the crop census even though the crop yield is materially deficient due to only one irrigation. In other years in which a large proration occurs, the water users may not take the entire amount prorated, either because they left a part of their acreage fallow or because the water was not needed for irrigation due to timely rainfall during the season. The large prorations were possible only during the first few years of project operation due to the available supply. These years were in the project development period during which time many farmers had not yet developed their entire acreage for irrigation. Consequently, Colorado's statement that the "proration figures . . . never correspond to the acreage actually irrigated and understate the amount of water available" is a totally unfounded criticism of our supply and demand figures. Colorado Brief at 21.

Colorado contends that other New Mexico users have chosen not to exercise their rights in periods of ample supply. Colorado Brief at 9. Despite the disavowals in its brief (Colorado Brief at 9, n. 5), Colorado restricted its analysis of irrigation at Vermejo Park to a period beginning in 1973. This is unequivocally clear from the testimony of Colorado's witness. *E.g.*, Tr. 305-07. Similarly, Colorado presented no historical analysis for Phelps Dodge and did not account for the evidence of its irrigation prior to the flood of 1965. Tr. 2174-75. The Master apparently adopted this analysis in determining the "current uses." Report of May 31, 1983 at 2-9. Colorado's claim that Mr. Helton analyzed the history of recorded flows is totally irrelevant. Colorado Brief at 9, n. 5. The issue,

and the Court's inquiry, was to irrigated acreage, not average annual flows at the Dawson gauge.

Colorado also attempts to support the Master's Report by arguing that the actual Dawson gauge figures show that there has been much more water than is necessary to satisfy the senior priorities of Phelps Dodge Corporation and Kaiser Steel Corporation and still satisfy the entire upstream decreed rights of Vermejo Park. Colorado Brief at 10-11. The Dawson gauge is of limited relevance for determining the available supply for the upstream uses of Vermejo Park and Kaiser Steel. In addition, the table showing the flows at the Dawson gauge provides only the total monthly and annual flow in acre-feet. Report of May 31, 1983, Tbl. 2. This record does not show when during the month the flows occurred nor the relation between the flow and the irrigation demand. Vermejo Park Corporation and Phelps Dodge Corporation do not have storage to regulate flood flows to satisfy the irrigation demand. Furthermore, the flood flows carry large amounts of debris and they cannot be diverted because the debris will plug the small ditches. *E.g.*, Tr. 2199. The recorded monthly flows at the Dawson gauge, especially during the irrigation season months of July, August and September, do not demonstrate that there is an adequate supply of water for the direct flow irrigation requirements of Vermejo Park and Phelps Dodge.

A more credible analysis of the water supply available to the direct flow irrigators is the testimony of those users. Witnesses for both Vermejo Park and Phelps Dodge testified to their inability to rely upon a sufficient supply of water during the irrigation season to produce crops on more acreage than is being irrigated. Vermejo Park has attempted to irrigate more acreage in each year since 1973,

but has not been able to depend on more than one watering. Tr. 2076 - 80, 2084, 2116-17. The same is true of Phelps Dodge. Tr. 2180, 2142, 2164-65.

Available Supply

Colorado supports its contention that the 1970s were not drought years by stating that precipitation in areas surrounding the Vermejo was not significantly lower on the average in the 1970s than in prior decades. Colorado Brief at 20. Colorado's statement is ostensibly based on a number of New Mexico exhibits. *See* N.M. Ex. Nos. F-4, F-6, F-8, F-9.

The actual precipitation values will not substantiate Colorado's argument. Precipitation at the weather stations at North Lake, Colorado, and Eagle Nest, New Mexico, was below normal in six of the nine years from 1970 through 1978. N.M. Ex. Nos. F-5, F-6. The significance of these deficits is made clearer when considering the elevation of the gauges in relation to the Maxwell gauge. It is true that precipitation at the Maxwell gauge (elev. 5,909) in the 1970s averaged close to the mean for previous decades, but precipitation at Maxwell contributes little flow to the Vermejo River at Dawson. Tr. 1217. The higher weather stations at North Lake (elev. 8,800) and Eagle Nest (elev. 8,280) are more indicative of the watershed precipitation that constitutes the flow in the Vermejo River at Dawson. Tr. 1218. Records at these stations show that the annual Vermejo River flows indicate a strong tendency to be below average in the same years that deficient annual precipitation occurs at Eagle Nest and North Lake.

Finally, Colorado also tries to attack the 17,000 acre-feet demand below the Dawson gauge by arguing that carryover

water was available to the District in 1967 and 1979, years in which New Mexico, the Bureau of Reclamation, and Congress believe the District was in short supply. Colorado Brief at 32. In this regard, Colorado contradicts itself, saying on one hand that the District's reservoirs will insulate the District from any effects of an appropriation by Colorado and, on the other hand, criticizing the District for trying to conserve a reserve supply of water.

It was carryover storage from 1966 that enabled the District to irrigate in the spring and early summer of 1967, when the flow at Dawson totalled only 369 acre-feet during the months of April, May, and June. Colo. Ex. No. 5. During this time, the District released approximately 5,000 acre-feet from its reservoirs. N.M. Ex. No. F-24. Summer rains provided sufficient inflow to result in a storage increase of approximately 5,600 acre-feet in the District's reservoirs. At the end of 1967, the carryover reservoir storage was 8,650 acre-feet and not the 11,300 acre-feet Colorado claims. Colorado Brief at 32. Assuming that the District released all of its carryover storage in 1967, which would not have been prudent and for which there was likely no demand because the storage occurred toward the end of the irrigation season, the shortage of 8,560 acre-feet still would not have been offset because of delivery losses between the reservoirs and the farms. N.M. Ex. No. F-37.

Colorado's principal argument with respect to available supply has been that the average basin discharge represented by the Dawson gauge provides the best evidence of divertible supply. Tr. 395-424. The Court has rejected such a theory. *Wyoming v. Colorado*, 259 U.S. 419, 471 (1922); *Colorado v. Kansas*, 320 U.S. 383, 396-97 (1943). Tendered New Mexico Exhibit No. F-56, which Colorado vehemently objected to and which the Master refused to receive in

evidence, displays the fallacy of Colorado's argument with undisputed U.S.G.S. records. The record is also abundantly clear in this regard. Tr. 1295, 1670. For this reason, Colorado has tried to deny that the Master relied upon the average figures supplied by Colorado. Colorado Brief at 28.

There is no disputing that the Master used average monthly and average annual flows to reach his ultimate conclusion that "an average of 10,900 acre feet at Dawson gauge would seem to provide a fair amount of water..." Report of May 31, 1983 at 11.

Colorado determines the available supply of water by using basin discharge or water produced from the watershed upstream from a given point of diversion. (Tr. 416). Colorado further attempts to supply a figure for virgin flow of the river, 1955-1979. This figure is achieved by taking the average annual flow of the river at the Dawson gauge and adding the depletions of the appropriators prior to the gauge, an accretion between the gauge and the Vermejo Conservancy District, and a questionable 2,000 acre-feet depleted by an unknown number, possibly hundreds of ponds and foot dams. The resulting figure reveals an average over 14,000 acre-feet of water in the Vermejo River virgin flow. (Plaintiff's Brief on Remand, pp. 28-29). Report of May 31, 1983 at 10.

The Master employs two other annual averages based upon different periods of time — 11,543 acre-feet for the period 1916-1979 and 8,262 acre-feet for the 1970s. Report of May 31, 1983 at 11.

Although the Master's figures from the Dawson gauge are indisputably annual averages, even a comparison of

these against either the Master's or New Mexico's computed demand reveals the predominance of shortage. The Master concludes that 10,900 acre-feet "would seem to provide a fair amount of available water, and more than enough to supply the current uses below the gauge." *Id.* Although New Mexico believes that the Master's use of an annual average figure of 10,900 acre-feet to show that supply meets demand is wrong, even on its merits the amount of 10,900 acre-feet is plainly inadequate to satisfy the demand for the diligently developed rights below the Dawson gauge, i.e., 17,000 acre-feet, or for the Master's own view of the "current uses," i.e., 11,400 acre-feet. Colorado cannot correct this obvious failing in the Special Master's Report.

POINT IV

COLORADO FAILED TO PRESENT EVIDENCE OF REASONABLE CONSERVATION MEASURES AVAILABLE TO NEW MEXICO UPON WHICH THE MASTER COULD HAVE SUPPORTED FINDINGS OF FACT.

In both his Report and his Additional Findings, the Special Master did not identify a single effective conservation measure available to New Mexico or discuss the physical or economic feasibility of any measure. Recognizing this basic deficiency in the Master's Report, Colorado attempts to provide independent support for the Master's conclusions in its Reply Brief. Apparently unaware of the significance of its assertion, Colorado argues that the Master has "identified several *areas* in which New Mexico could eliminate waste and inefficiency from its use of Vermejo River water. . . ." Colorado Brief at 40, emphasis

added. Inadvertently, Colorado recognizes the speculative nature of the Master's discussion of conservation.

Administration

While describing administration as "the most important element" in conserving Vermejo water, the Master's fact finding in this regard is wholly deficient. He discusses administration chiefly with regard to four items: stockponds, obstructed diversions, headgate spills, and monitoring and regulating water use. Report of May 31, 1983 at 18-20.

The Master found that there are approximately 2,024 stockponds in Colfax County, New Mexico, that the number of "ponds and other structures" should be reduced, and the remaining ponds be governed by "regulation of some type." *Id.* at 18. Without reference to the 3,771 square mile area of Colfax County, most of which is used for grazing, he presumes that 2,024 is an inordinate number. Had the Master heard the evidence described in New Mexico's Amended Narrative Tender of Evidence, he would have found that there are only 80 active stockponds within the Vermejo River drainage above the District's diversions, that there are no "other structures for retaining water," and that the maximum annual stockwater depletion does not exceed 192 acre-feet per year. *See* Amended Narrative Tender of Evidence at 2-4. Two facts are unassailable: the stockponds represent a valid beneficial use of Vermejo water and their depletion is not significant.

In an attempt to bolster the Master's Report, Colorado states that New Mexico failed "to realize that the Special Master to a large extent found in [our] favor concluding that [the ponds] were both necessary and beneficial."

Colorado Brief at 45. This statement, however, is irrelevant to the Master's ultimate conclusion that Vermejo water could be conserved through some unidentified administration of stockponds.

The Master's statement that there is no administration with respect to blocked diversion works is unfounded. Report of May 31, 1983 at 19. The evidence shows that the District officials operate an alarm system that notifies the Manager and other District employees when the Vermejo River floods at the diversion structures. This system allows the District personnel to reach the diversion structure in a timely manner to clear debris obstructing the canal headgates, allowing the works to divert as much of the floodwater as possible. Tr. 1954. This alarm system is an effective means for ensuring that blocked diversion works are cleared to permit the maximum diversion of water. In any event water not divertible by the District flows down the Canadian River to Conchas Reservoir and aids in meeting chronic shortages for rights senior to the proposed diversions of C. F. & I.

In light of the Master's failure to specify facts in support of his conclusion that "proper administration" could conserve Vermejo water, Colorado attempts to substantiate his conclusions. First, Colorado asserts that New Mexico "makes no attempt to ensure that the proper amount of water is being diverted in relation to the acreage being irrigated or to declare all or part of the water rights forfeited for nonuse." Colorado Brief at 35. The first statement is not true, as the record shows. Tr. 1063-64, 2416-17. It makes no difference that each and every diversion on the Vermejo is not metered. *Id.* In the western states, farmers are extremely careful with their

water supplies, especially in times of shortage. If one saw another wasting water the matter would be quickly resolved by the water users. Tr. 2416-17. Furthermore, no presumption of overuse should accrue to Colorado because diversions to some tracts of irrigated land in New Mexico are not metered. On the contrary, the burden remains on Colorado to prove that there is wasteful overuse in New Mexico that should be controlled administratively. Colorado did not meet such a burden.

Many rivers in New Mexico are controlled by water masters appointed by the State Engineer or the courts. To date, the Vermejo has not required a water master because of the small number of direct diversions and the informal practice of self-initiated priority calls. Tr. 2086-87, 2088, 2132, 2144, 2165, 2179. If any evidence of overuse or waste were presented to the State Engineer, however, he would seek to enjoin such use in the courts. The only "evidence" of overuse in the record is Colorado's distortion of a seepage run conducted by the U.S.G.S. for New Mexico. By lifting out of context two instantaneous measurements taken a month apart, Colorado tries to make it appear that Phelps Dodge overused water during a one month period. Colorado Brief at 35-36. This "evidence" is as probative as using two instants widely separated in time to prove a continuing fact. With regard to forfeitures, they are regularly declared in New Mexico while Colorado has no statutory forfeiture provision. *See also*, New Mexico Brief at 74-76.

Administration of priorities could conserve no Vermejo water in any event. Its only utility would be to distribute an admittedly short supply strictly pursuant to the priorities of the competing property rights.

Colorado also tries to support its administration argument with the fact that a water master has not been appointed on the Vermejo. It refers to a Bureau of Reclamation memorandum describing a meeting on December 13, 1976. The discussion of "excessive losses" at the meeting did not imply that those losses constituted waste unnecessary to the project operation. In fact, much of those losses reappear in the stream system as return flow available for users downstream.

Closed Stockwater System

When confronted with the argument that effective conservation measures do not exist, Colorado retorts that the one "fact" which it has stressed throughout this case is "that a closed stock and domestic water system could eliminate the waste of over 2,000 acre-feet annually." Colorado Brief at 41, n. 20.

The important factor to consider in regard to the closed domestic and stockwater system is the timing. This lawsuit was instituted by Colorado in 1978. Nearly a decade ago, the water users in the Maxwell area began discussing the possibility of building a stockwater distribution system that could save the water necessarily lost by utilizing the Vermejo Conservancy District's 60 mile network of open canals. Approximately seven years ago the Maxwell Cooperative Water Users Association was formed to investigate possible solutions. N.M. Ex. No. E-3 at 1.

It took the Association seven years of hard work to finance and construct the system. In 1976, the New Mexico Interstate Stream Commission provided the Association with grant funds to finance a feasibility report for a closed pipeline water distribution system. Amended Narrative

Tender of Evidence, Affidavit of L. Knox at 2. Every conceivable private, state, and federal agency was applied to for loan or grant money to finance the project. Tr. 2763-70. Finally, after arranging for loan and grant funds in 1982, two wells were drilled in the alluvium next to the Vermejo River. Water rights were transferred to the new point of diversion, 48 miles of pipeline were laid, and a 60,000 gallon storage tank was installed. After ten years of effort and persistence, the first meter was installed on February 18, 1983.⁶ See Amended Narrative Tender of Evidence at 4-6.

During this period, Colorado filed this lawsuit on behalf of C. F. & I. Claiming that the water salvaged by the efforts of New Mexicans should be awarded to C. F. & I., Colorado now asserts that the Court should not protect "wasteful" uses. Because of the timing of New Mexico's conservation efforts, however, the question is not whether the Court will protect "wasteful" uses, but rather whether the Court will protect ongoing conservation efforts.

The record shows that the primary reason the Maxwell Cooperative Water Users Association undertook to build a closed system was because they experienced shortages for irrigation and they believed the water thus conserved would mitigate shortages. Tr. 276. There is no reason in law or equity why the Court should refuse to protect the kind of conservation effort it has stated should be under-

⁶ Colorado objected to the Master hearing any evidence on the actual existence of the system, the costs of authorizing and constructing it, and the obligations New Mexicans incurred as a result of its construction. Colorado has also stated that this aspect of its case "is now a reality which New Mexico cannot deny." *Id.* at 41, n. 21. New Mexico obviously does not deny the existence of the system, but rather that the benefits of conservation efforts which preceded this lawsuit should now be awarded for the vicarious benefit of C. F. & I.

taken wherever possible. *Colorado v. New Mexico*, 103 S. Ct. at 546-547. If it is not protected, the incentive to conserve interstate waters would be replaced by a distinct incentive not to conserve any water for fear that neighboring states would file suit for an "equitable apportionment" of the water conserved.

In sum, the Master's hypothetical discussion of "areas" of conservation does **not** enable the Court to know whether there are any physically and economically feasible conservation measures available to New Mexico to eliminate some unidentified waste or unreasonable inefficiency.

CONCLUSION

The Special Master set out to determine the equities on both sides of the New Mexico—Colorado state line. With regard to New Mexico, his reasoning is flawed in two critical respects: he used average basin discharge instead of the amount of water actually available for diversion to try to understand supply and demand, and he hypothesized the possibility of conservation measures in New Mexico without discussing any specific measure or its physical or economic feasibility. As a result, he concluded that there has been no shortage of Vermejo water in New Mexico and that there could be little, if any, injury to the "diligently developed" rights in New Mexico, provided that conservation in various areas could be undertaken. For Colorado, the Master idealized Colorado's proposed use of water and concluded that equity should be imputed to Colorado simply because the headwaters of the Vermejo rise just inside the State.

It is New Mexico's position that legally and equitably the Master is in error. He has analyzed superficial, un-

telling facts in attempting to balance the equities. The result is a recommendation to the Court that is manifestly inequitable and unjust, and which should be rejected.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Jay F. Stein, hereby certify that I am a member of the bar of this Court and that on October 24, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be mailed the requisite number of copies of the foregoing Motion and Reply Brief, by first class mail, postage prepaid, to the following officials of the State of Colorado:

The Honorable
Richard D. Lamm
Governor of the State of
Colorado
136 State Capitol
Denver, Colorado 80203

The Honorable
Duane Woodard
Attorney General of the State
of Colorado
1525 Sherman St., 3rd Floor
Denver, Colorado 80203

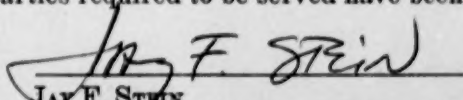
I certify that on October 24, 1983, pursuant to Rule 28 of the Rules of the Supreme Court of the United States, I caused to be served by express mail, postage prepaid, the requisite number of copies of the foregoing Motion and Reply Brief on the following counsel of record:

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I certify that all parties required to be served have been served.


JAY F. STEIN
Special Assistant Attorney General

NO.	TITLE
80 Original	State of Colorado, Plaintiff, v. Jeff Bingaman State of New Mexico and Toney Anaya, Attorney General of New Mexico.
DOCKETED	COURT
July 21, 1978	Motion for leave to file bill of complaint.
DATE	PROCEEDINGS AND ORDERS
	Counsel for Plaintiff: David W. Robbins, Counsel for Defendant: Paul G. Bardacke
July 21, 1978	Motion for leave to file bill of complaint filed.
Aug. 26, 1978	Order extending time to file response until 10/18/78.
Sept. 28, 1978	DISTRIBUTED. 10-13. (Motion for leave to file bill of complaint.)
	Response Requested.
Oct. 13, 1978	Brief in opposition filed, Attorney General of New Mexico. (Response thereto)
Oct. 19, 1978	DISTRIBUTED. 11-3. (Motion for leave to file bill of complaint.)
	Response Requested from the State of Colorado.
Nov. 2, 1978	Reply from the State of Colorado filed.
Nov. 8, 1978	DISTRIBUTED. 11-22.
Nov. 27, 1978	The motion for leave to file a bill of complaint is GRANTED and the defendants are allowed sixty days in which to answer.
Jan. 24, 1979	Answer to bill of complaint and motion to refer to Special Master filed.
Jan. 25, 1979	DISTRIBUTED. 2-16. (Answer to bill of complaint and motion to refer to Special Master.)
March 12, 1979	REDISTRIBUTED. 3-16. (Answer to bill of complaint and motion to refer to Special Master.)
March 20, 1979	REDISTRIBUTED. 3-23. (Answer to bill of complaint and motion to refer to Special Master.)
March 30, 1979	REDISTRIBUTED. 3-30. (Answer to bill of complaint and motion to refer to Special Master.)
Apr. 11, 1979	REDISTRIBUTED. 4-13. (Answer to bill of complaint and motion to refer to Special Master.)
Apr. 16, 1979	It is ordered that the Honorable Ewing T. Kerr, Senior Judge for the United States District Court for the District of Wyoming, is appointed Special Master. Powell, J., OUT.
Apr. 26, 1979	Oath of Special Master filed.
Oct. 20, 1980	Amended Answer filed. (Over)

Title

No.

DATE	PROCEEDINGS AND ORDERS
Nov. 5, 1980	DISTRIBUTED. 11-26. (Amended answer)
Dec. 1, 1980	The amended answer to the Bill of Complaint is referred to the Special Master.
Jan. 9, 1982	Report of Special Master of the Equitable Apportionment of the Vermejo River filed.
Jan. 13, 1982	DISTRIBUTED. 2-19. (Above report of special master).
Feb. 22, 1982	The Report of the Special Master on the Equitable Apportionment of the Vermejo River is received and ordered filed. Exceptions, if any, with supporting briefs to the Report may be filed by the parties within 45 days. Reply briefs, if any, to such Exceptions may be filed within 30 days.
Mar. 26, 1982	Waiver of right to file exceptions to the Report of the Special Master by Plaintiff filed.
April 6, 1982	Motion of Kaiser Steel Corporation, et al. for leave to file a brief as amici curiae filed.
Apr. 8, 1982	Exceptions to the Report of the Special Master filed.
Apr. 22, 1982	Motion of New Mexico, et al. for additional time for oral argument filed.
Apr. 22, 1982	Opposition of Colorado to Motion of Kaiser Steel Corporation, et al. for leave to file a brief as amici curiae filed.
May 10, 1982	Reply brief filed by the State of Colorado to Exceptions to the Report of the Special Master.
May 12, 1982	DISTRIBUTED. 5-27. (Exceptions of New Mexico, Waiver of Colorado and Motion of Kaiser Steel Corporation, et al. for leave to file a brief as amici curiae).
June 1, 1982	The motion of Kaiser Steel Corporation, et al. for leave to file a brief, as amicus curiae is GRANTED. The Exceptions of New Mexico to the Report of the Special Master are set for oral argument in due course.
June 7, 1982	The motion of New Mexico, et al. for additional time for oral argument is DENIED.
June 7, 1982	Motion of New Mexico to file reply brief filed.
June 7, 1982	DISTRIBUTED. 6-10. (Above motion).
June 14, 1982	The motion of New Mexico for leave to file a reply brief is GRANTED.
June 24, 1982	Reply brief of Colorado to Motion of Kaiser Steel Corporation, et al. for leave to file amici curiae brief.
June 24, 1982	Objection by Colorado to motion of New Mexico to file reply brief filed.
Aug. 5, 1982	CIRCULATED.
Oct. 4, 1982	ARGUED.

NO.	TITLE
80 Original	State of Colorado, Plaintiff v. State of New Mexico and Jeff Bingaman, Attorney General of New Mexico
DOCKETED	COURT
July 21, 1978	Motion for leave to file bill of complaint.
DATE	PROCEEDINGS AND ORDERS
Dec. 13, 1982	Adjudged to be REMANDED FOR FURTHER FINDINGS. Opinion by Justice Marshall, with whom Burger, CJ., Brennan, J., White, J., Blackmun, J., Rehnquist, J. and Stevens, JJ. joined. Concurring opinion by Burger, CJ., with whom Stevens, J., joined. Opinion by O'Connor, J., concurring in the judgment, with whom Justice Powell joined.
Jan. 6, 1983	Petition for rehearing filed.
Jan. 19, 1983	DISTRIBUTED. February 18, 1983.
Feb. 22, 1983	Rehearing DENIED.
June 7, 1983	Additional factual findings (submitted pursuant to the 12/13/82 opinion of Court). <u>(PRINTED)</u>
June 7, 1983	DISTRIBUTED. June 23, 1983.
June 27, 1983	The Report of the Special Master containing additional factual findings requested by order of the Court is received and ordered filed. Exceptions to the Report, with supporting briefs, may be filed by the parties within 45 days. Replies to the Exceptions, with supporting briefs, may be filed within 30 days.
July 21, 1983	Waiver of right of Colorado to file Exceptions to the Report of the Special Master filed.
August 11, 1983	Exceptions of New Mexico to the Additional Factual Findings of the Special Master filed.
August 19, 1983	Narrative Tender of Evidence submitted by defendants and requested findings of fact and conclusions of law. Statement by Special Master that he elects not to take additional evidence. <u>(NOT PRINTED)</u>
Aug. 30, 1983	Order extending time to file Colorado's reply to the exceptions of New Mexico to and including Sept. 23, 1983.
Sept. 23, 1983	Reply brief by Colorado filed.
Sept. 28, 1983	DISTRIBUTED. 10-14.
Oct. 19, 1983	REDISTRIBUTED. 10/28.
Oct. 24, 1983	Motion of New Mexico for leave to file a reply brief filed.
Oct. 24, 1983	REDISTRIBUTED. 10/28.
Oct. 31, 1983	The motion of New Mexico for leave to file a reply brief is granted. The Exceptions of New Mexico to the Additional Factual Findings of the Special Master are set for oral argument in due course.
Nov. 16, 1983	CIRCULATED.
Jan. 9, 1984	ARGUED.